# PURCHASING

April, 1946

R. C. KELLEY: RECONVERTING THE PURCHASING AGENT

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CONOVER-MAST PUBLICATION . 35

### To help you make it



In plants and factories of every type and size, speed and quality of production go up, unit costs go down, when machinery is effectively lubricated. Experienced management everywhere assures this with Texaco Products and Texaco Specialized Engineering Service. Here are some of the benefits Texaco brings—

- Service-proved lubricants in a complete line to meet the requirements of your particular type of equipment, plus...
- 2. Expert lubrication engineering serv-

ice to assure your use of the right lubricant, in the right amount, in the right place, plus...

3. The advantages of centralized purchasing—whether for several plants or a hundred—with prompt delivery right to your door, through Texaco's nation-wide distribution set-up.

Let Texaco prove what it can do for you. Just call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

PURCH



TEXACO Lubricants, Fuels and Engineering Service

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON EVERY SUNDAY NIGHT-CBS



Top performance over the longest period of time is the result of selecting the correct type and size of electric motor. Century's wide range of types and sizes will satisfy all popular requirements.

Century motors are built in open protected, splash proof, totally enclosed fan cooled, and explosion proof types; with rigid, cushion, horizontal, or vertical mountings. Century motor sizes range from 1/20 to 600 horsepower and are available in single phase, three phase, and direct current types.

There is a Century motor with the correct electrical characteristics to meet the load requirements — and with the right frame to adequately protect the motor from any hazardous atmospheres. By selecting the correct Century motor you get top performance.

Be sure you get top performance from your electric motor driven installations — specify Century.



#### CENTURY ELECTRIC CO.

1806 Pine Street, St. Louis 3, Missouri Offices and Stock Points in Principal Cities

Splash Proof Protection



Explosion Proof



Is yours the pattern of waste as shown in the authentic camera record above? Or is it the pattern of thrift at the right? (The same job as done with Barrett Lift-trucks and Skids.)

This particular job-stacking goods for shipment—is common to all plants. And all too often it's done the costly way . . . loads hauled to the shipping room on platform trucks . . . unloaded . . . set in piles to await shipment . . . then reloaded when trucks or freight cars arrive. The Barrett Lift-truck System eliminates all that! Your materials stay on Skids, ready to roll without reloading. And they always move in larger, more profitable, unit loads—not one piece at a time.

The Barrett System speeds material's from

room to room, floor to floor, in and out of storage-so effectively that one man does more than 3 or 4! Let a Barrett engineer show you how . . . no cost or obligation.

BARRETT-CRAVENS COMPANY

3280 West 30th Street Chicago 23, Illinois

Representatives in All Principal Cities Canadian Licensee: S. A. Armstrong, Ltd. . Toronto, Canada



THE BARRETT LIFT-TRUCK SYSTEM!

Here is a pattern of THRIFT . . . saving time and effort

with Barrett Lift-trucks and Skids. See how materials

stay on the Skid—in a big 45-carton load—while one

simple move frees the truck for other jobs!

A bookful of money-saving ideas — yours for the asking. Write for your free copy of the Barrett Junior Catalog!



ONE MAN DOES MORE THAN 3 OR 4 . . . WITH A BARRETT

HAND LIFT-TRUCKS

















NIFTY SYSTEM

This flooring is made to withstand the wear and tear of heavy duty trucks and heavy weight loads.



Secure footing on jobs like this, or where men push or pull heavy objects, is another advantage of the 4-Way Plate.



Workers move at a brisk, confident pace on Inland's 4-Way, slip-resistant and longwearing surface.

## A Safe Tough Flooring - Low in Cost

• When traffic is heavy or floors must take abuse—trucks with big loads and rough wear in general—Inland's 4-Way Floor Plate is a good investment. It not only "wears like iron" and lasts longer but is always guarding against accidental slipping. That is why it is also used so often for stairway safety, sure footing around or up on machines, along aisles, for platforms and to cover uneven floors.

The 4-Way lugs never catch into heels or wheels. They are just the right height for sure-grip footing—needed where men push trucks, carry loads, and where they can move about with assurance. The slip-resistant projections are scientifically designed and positioned four-ways to provide safety in EVERY direction; also to provide for quick and easy cleaning and draining.

Since 4-Way Plate will not burn, warp, splinter or absorb liquids or odors, and far outlasts other types of flooring, its applications are many. Typical examples include machinery decks, bus or coach steps and vestibules, walkways on machines, in power plants, factories and other buildings. 4-Way Plate is furnished in two size patterns and comes in various thicknesses to suit a wide range of purposes. It is easy to install and can be cut, welded and bent.

#### Write for illustrated booklet giving complete data.

Inland Steel Co., 38 S. Dearborn St., Chicago 3, Ill. Sales Offices: Cincinnati, Detroit, Indianapolis, Kansas City, Milwau-

kee, New York, St. Paul, St. Louis. *Principal Products*: Bars, Structurals, Plates, Sheets, Strip, Tin Plate, Floor Plate, Piling, Reinforcing Bars, Rails, Track Accessories.

**INLAND 4-WAY FLOOR PLATE** 



Scientific advances, stimulated by the exigencies of war, have provided new horizons for practically every industrial enterprise. But, with each advance comes new problems, new "bugs" that must be eliminated before tomorrow's products can be successfully produced and marketed.

#### Precision-Molded RUBBER Parts & Products ACUSHNET

Not the least problem confronting manufacturers is the selection of basic material best suited for vital parts in the

Improved methods and skill in compounding synthetic and natural rubber have made possible the molding of parts and assemblies of their products. products with the exact properties needed to control "weak

We are expertly staffed and well equipped to precisionmold parts or products in any quantity by compression, link" conditions.

In step with every technological advance, ACUSHNET'S injection or transfer methods. Engineering and Laboratory Staffs will design the part or product needed to control your particular difficulties or meet exactly your specifications. Our entire research, designing and production facilities are at your disposal at any time. When writing, please include complete information or samples.





The above group of molded rubber parts only partially indicates the diversity and range of our precision production. If it can be molded of rubber-ACUSHNET will mold it!

#### **THE MIRACLE BRUSH OF 1001 USES**

OSBORN'S REVOLUTIONARY NEW POWER BRUSH-THE SITUFT-COSTS 17¢-HAS



Mounted directly in a drill press chuck. Situft is quickly removing burr from a small machined part.

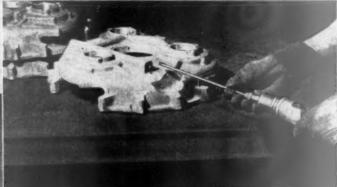
#### SAVED THOUSANDS OF DOLLARS

For deburring....scale removal....thread cleaning....removing rust, corrosion and foreign matter, etc., from hard-to-reach places. Can be used on any high speed drill press, portable tool or bench grinder.

NOW AVAILABLE FROM YOUR LOCAL OSBORN DISTRIBUTOR



Inserted in a special mounting, Situft is removing burrs and sharp edges from two threaded surfaces in a single operation.



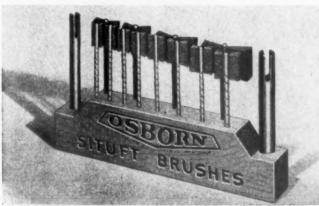
Deep cavities in castings easily and quickly cleaned with Situft and portable tool.



Inside cleaning and deburring is simple and fast with Situft.



Extra deep cavities being cleaned on a lathe with Situft.



Special tool crib kit of 12 brushes {1 of each size—1/4" to 11/4"} plus 2 holders: \$2.85.

THE OSBORN MANUFACTURING COMPANY
5401 Hamilton Ave. • Cleveland, Obio



WORLD'S LANGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

Set hold one that way

Buy em
by the
"feel"

WRENCHES

BUY THEM FROM YOUR INDUSTRIAL SUPPLY DISTRIBUTOR

Billings

DON'T FORGET, BILLINGS

CAN MAKE YOUR SPECIAL FORGINGS

100.



CRAFTSMEN SINCE 1869 THE BILLINGS & SPENCER CO. HARTFORD 6, CONN., U. S. A.



With your motor, condenser, camera or any other product attached to a metal disk and fitted snugly in a J&L Steel Barrel Company Jaltainer it can be shipped to any place in the world, under the most adverse conditions without damage.

Hermetically sealed against dust, mildew, moisture, and rust, the Jaltainer protects its contents from rough handling in transit and in storage at less cost than a conventional export package. Write for more information about a Jaltainer to protect your product.



#### J&L STEEL BARREL COMPANY

A SUBSIDIARY OF JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH 30, PA.

PLANTS:

BAYONNE, N. J. . CLEVELAND, OHIO PHILADELPHIA, PA. . NEW ORLEANS (GRETNA), LA. . NO. KANSAS CITY, MO. . PORT ARTHUR, TEXAS

# "Know-How" Information

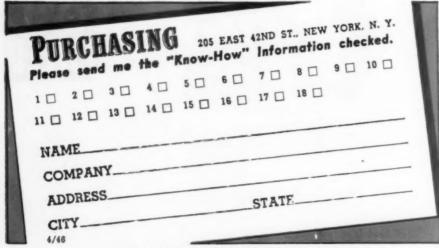
- ☐ 1. ORGANIC COATINGS—Booklet describes some of the essential factors involved in the formulation of a surface coating, and discusses important characteristics of synthetic resins and their uses and nonuses. You will find this a valuable informative or refresher course on the time honored as well as the newer resins. United Chromium, Incorporated.
- ☐ 2. SPINNING—Bulletin available from Gray Manufacturing Co. illustrates a variety of spun products and describes new magnesium techniques. The Company is prepared to produce sizes and shapes of spinning from one inch in diameter to 72 inches in diameter.
- 3. CONTINUOUS CAST BRONZES—Bulletin No. 69 describing Ampcoloy Continuous Cast Bronzes is available from Ampco Metal, Inc. They are said to make for improved quality of products, faster production costs. Practically no scrap accumulates due to metal faults, and due to excellent surface finish of the rod, preliminary machining operations are eliminated.
- ☐ 4. PURCHASE CONTROL—Booklet entitled "The Postindex System of Purchase Control" has been published by the Art Metal Construction Co. The system is said to provide the means of instant and accurate control of material procurement and handling operations and to help "the Purchasing Department Run Like a clock". System is explained in detail, and forms used are illustrated.
- ☐ 5. STAINLESS STEEL Fabricating—Bulletin issued by Alloy Manufacturing Company describes its stainless steel fabricat-

ing service, and illustrates recent stainless steel work. It contains table of Standard Type Numbers and Analyses.

- ☐ 6. RIVETING MACHINES—Bulletin describes Townsend Riveters which are built to "handle every riveting process and product". It contains operating data, specifications, and charts for ordering parts.
- ☐ 7. TUBING WEIGHT TABLES—Booklet of "Master Weight Tables for Round Steel Tubing" including decimal equivalents for fractional parts of a foot, dimensions and weights of pipe sizes for minimum wall and average wall tubing, and weight tables for square, rectangular, hexagonal and octagonal tubing, is available from The Ohio Seamless Tube Co.
- □ 8. MATERIALS HANDLING—Salsbury turnet trucks which include lift, cargo, and tractor types, are described in new bulletin. Lift type takes ton load up 15% ramp; tractor type pulls up to 12,000 lbs. on smooth level surface. They are made by Nutting Truck & Caster Co.
- ☐ 9. FASTENERS—Revised catalog issued by Simmons Fastener Corp., includes the latest data and specifications on Quick-Lock, Spring-Lock, and Lock-Nut fasteners. Specs for the many types are accompanied by illustrations and line drawings.
- ☐ 10. COATED ABRASIVES Service Booklet describes the six branch office demonstration laboratories for customer use in pre-testing abrasive methods and equipment, established by Behr-Manning in Chicago, St. Louis, Detroit, Boston, Cleveland and Troy. Field engineer will arrange for use of facilities.

- ☐ 11. COATING & ADHESIVES Resin—Poly-pale resin, Hercules Powder Company's polymerized resin which is of pale color and wide solubility, has high melting point, and resists oxidation, is described in new bulletin. It is being used in gums, oils, varnishes, adhesives, paper coatings, linoleum and other indusries.
- ☐ 12. FINISHING WHEELS—Bulletin describes Manhattan's engineered finishing wheels which are available in several resiliencies with a synthetic rubber bond. Features include cushion action, uniform performance, versatility and adaptability. Table shows maximum safe operating speeds for each type of bond. Manhattan Rubber Division.
- ☐ 13. SIMPLIFYING PAPERWORK—Form-craft Digest D 194 explains system that resulted in centralized writing of records, 50% saving in time of clerks, and 33% saving in overall operation of writing and handling records. It contains many worth-while ideas. The Standard Register Co.
- ☐ 14. DIE & WEAR PARTS Catalog 46-WP, tells about Talide tipped centerless grinder blades, wire and tube dies, sheet metal dies, extrusion and shape dies, bushings, gages, centers, bar stock, etc. It also gives general information about Talide metal. Metal Carbides Corp.
- □ 15. STAINLESS STEEL—New Handbook of Stainless Steel, 100 pages, 5 x 7½", issued by Allegheny Ludlum Steel Corp., contains data on 26 stainless types, a 44-column finder table, corrosion resistance to 230 materials, discussion of properties, products, available forms and sizes and fabrication methods.
- ☐ 16. HAND TRUCK—Circular describes Handy "one-handle", steel all-welded hand truck which is designed for all kinds of trucking. Load is carried on the wheel. Excellent for use in aisles and close places. Schmidgall Mfg. Co.
- ☐ 17. STOOLS. CHAIRS, Adjustable Bulletin 45A describes Kewaunee Automatic adjustable stools and chairs which are automatically adjusted "in a split second" to any desired height merely a matter of lifting the seat. Clutch holds seat in position with absolute security. Kewaunee Mig. Co.
- Π 18. CUTTING FLUIDS "Water-Mixed Cutting Fluids" is title of 20-page pocket size booklet "which contains a wealth of practical information for users of 'soluble cils," available from D. A. Stuart Oil Co.

Continued on page 12



FOUR PAGES OF "KNOW HOW" 10-12-14-16



T's the kind of perfect-fit finish that's pretty sure to result when human skill and The right file for the job get together. In the operation above a Nicholson Long Angle Lathe File is being used to remove the last few thousandths inch of stock and then to give the shaft the final required smoothness.

Smooth-finishing, under light pressure, is the primary purpose of this very accurate Lathe file. But-increase the pressure ever so little and the same file will also do a good stock-removal job-faster, in fact, than a regular Mill file.

Lathe file vs. Mill file. Because of the 45° angle of its teeth, the Nicholson

or Black Diamond Long Angle Lathe File overcomes filling up and consequently scratching the surface of the work—a tendency common in the shorter angle Mill Bastard when used as a "lathe" file. The chips slide down the gullets and are forced out at the edge by the motion of the work against the file. This not only makes the file self-clearing, but provides much cleaner shearing, eliminates drag or tear, prevents "chatter," assures much faster cutting.

Order through your mill-supply house.

FREE to managements, production heads, purchasing agents and key mechanics—the Nicholson 48-page illustrated book, "File Filosophy." on kinds, use and care of files.



NICHOLSON FILE CO. • 28 ACORN ST., PROVIDENCE 1, R. I



NICHOLSON FILES FOR EVERY PURPOSE

#### "Know-How" Information, Continued USE COUPON ON EACH PAGE

Featured articles are "Cutting Fluids and Hygiene" and "Design Data for Cutting Fluid Systems" with accompanying charts.

☐ 19. MATERIAL HANDLING—A 56-page Material-handling handbook, just republished, is available from the Electric Industrial Truck Association. It is profusely illustrated with photographs and graphs.

☐ 20. PAPER BAGS—Booklet on the care of paper bags is available from Bemis Bro. Bag Co. It is entitled "Important Facts for the Man in Charge of Paper Bag Storage," and it gives a lot of practical data regarding the proper methods to follow in caring for paper bags in storage, and how to restore moisture to bags after they have dried out.

☐ 21. GRINDING MACHINES—Engineering Data Handbook, No. G-536, covering Cincinnati center-type and centerless grinding machines, and centerless lapping machines, has just been issued by Cincinnati Milling & Grinding Machines, Inc.

☐ 22. VISIBLE RECORD FORMS—Shif-Dex Visible record forms are described in bulletin "How to Cut Record Keeping Costs" available from Wilson Jones Company.

□ 23. COMMUNICATION SYSTEMS — Literature describes the Bogen Sound Systems. The Model S415 system is α high powered intercommunication and program distribution system; capacity 40 stations. Equipment includes all types and sizes of sound distribution installations. David Bogen Co. Inc.

☐ 24. GLASS or PLASTICS THICKNESS—
The Aireon Optical Micrometer for gauging the thickness of transparent plastics or plate glass, is described in bulletin issued by Aireon Manufacturing Co. Simplifies measuring of central parts of large sheets. It also accurately measures transparent and curved plastics.

☐ 25. FLOW REGULATOR — Automatic Hydraulic Flow Regulator is title of bulle-

tin describing Waterman Flow regulator which is said to hold constant the rate of flow of fluids at any desired predetermined amount, regardless of variations in applied pressure or work resistance. Recommended for hydraulic machine tools where constant rate of feed must be maintained, and on hoist or lift trucks. Waterman Engineering Co.

☐ 26. INDUSTRIAL DRYERS—Dryers of the batch, tray and continuous types which utilize all the various sources of heat, and apply heat by radiation, conduction, convection, either alone or in combination, are described in detail in new Catalog No. 131 published by the J. O. Ross Engineering Corp.

☐ 27. TWEEZER SPOT WELDER—Catalog describes Besco Tweezer Spot Welding machine, a portable unit which weighs about 25 lbs. Cabinet is about the size of a small radio. Unit plugs into 115V 60 c power supply—and may be easily adapted to 220V. Tweezers eliminate oxidation. Maker states tweezers will not heat up and may be held in the hands with absolute safety. Tips may be shaped or filed to accommodate oddly formed units. The Tweezer-Weld Corp.

☐ 28. SWIVEL PIPE COUPLING—Bulletin describes the All-Flex ball-bearing swivel pipe coupling, designed to convey fluids under high pressure through a pipe which swivels or rotates a full 360 deg. Combination of multiple synthetic packings and metallic seals is said to offer absolute protection against leakage at high and low pressures. Snyder Sales Corp.

☐ 29. VISIBLE RECORDS — New Acme Visible Records catalog is yours for the asking; 96 pages in four colors. It is said to be the most complete catalog ever produced by Acme. It contains descriptions, illustrations of record applications, and other data. You should have copy for your file on paperwork. Acme Visible Records, Inc.

☐ 30. DESK LIGHTING — Bulletin describes Van Dyke "Adjusta-Lite", fluores-

cent desk lamp which permits easy adjustment to any height desired. Clamp models are also available. Van Dyke Industries.

☐ 31. PORTABLE FLAME CUTTER—Publication, No. 69, describes Victor Pack Type Emergency Flame Cutting Outfit. It was originally developed for the Navy, and is housed in an aluminum carrying case. The unit itself lies in an aluminum cradle and a well fitting canvas bag holds it firmly to operator's back. Victor Equipment Co.

☐ 32. MOBILE CANTEEN — Circular describes AerVoid Mobile Canteen for dispensing coffee, sandwiches, candies, tobaccos, cold beverages, pies, cookies, etc. Unit is designed to furnish profitable factory refreshment self-service to workers "at their work". Vacuum Can Co.

☐ 33. SWAGING MACHINES — Catalog Section SM describes Standard Machinery Company's "Standard" rotary swaging machines, special swagers, the Hydroformer, cable swager, and auxiliary equipment.

☐ 34. INDICATOR LIGHTS — Catalog 46 desscribes Gothard indicator light assemblies for panel board and instrument signaling. Lamps, bulbs, jewels, etc., are illustrated and outlined in detail. Gothard Manufacturing Co.

☐ 35. WELDING ACCESSORIES — Folder issued by Hobart Brothers Co. illustrates welders' safety garments and protective clothing and line of accessories for high-grade welding — tomahawks, curtains, cable, electrode holders, clamps, cleaning brushes, etc.

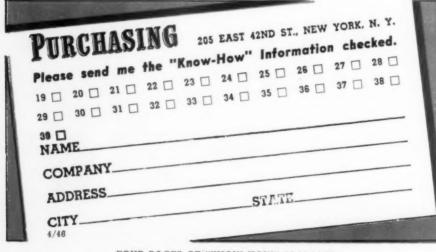
☐ 36. TURBINE LUBRICATION — Operating characteristics and advantages of Gulfcrest Oil for steam turbine lubrications are described in new booklet issued by Gulf Oil Corp. Alchler process of refining is described in the booklet which also explains how air is beneficial to Gulfcrest Oil under service conditions, and how the Alchler process of refining makes this lubricant highly responsive to oxidation and corrosion inhibitors.

☐ 37. WATERPROOF SHIPPING Liners — Illustrated brochure of 16 pages describes application of Aquastop synthetic impregnated, waterproof sealed case liners, and the steps in applying it to shipping case panels, and the method of sealing. Protective Coatings Corp.

☐ 38. STOPS RUST—Rusticide, chemical rust destroyer which is said to stop rust, prime metal for painting, clean non-ferrous metals, remove rust, clean chromium, and remove stains from porcelain is described in circular issued by Rusticide Products Co.

☐ 39. METAL BELT-SANDING — General Catalog and paper entitled "Belt Sanding of Metal," by E. B. Gallaher, M. E., are available from the Clover Manufacturing Co. Subject matter in bulletin includes

Continued on page 14



FOUR PAGES OF "KNOW HOW" 10-12-14-16



#### PLASTICS . . . FOR THAT VITAL SPARK

Here's an example of how plastics can combine ruggedness
 ... precision . . . economy.

It's the distributor cap made by G. E. for the Wico Electric Company's magneto—famous for dependability under the toughest operating conditions, in four-cylinder engines that power such heavy-duty equipment as tractors and bulldozers.

Sparking depends upon sure contact—and one-piece metal inserts are compression-molded in the distributor cap to stay for life. These inserts are insulated and protected by the tough

wood-flour-filled phenolic molding compound. Little machining is required before assembly—and one molded distributor cap is interchangeable with another.

Bring any plastics problems you may have to G. E.—the world's largest manufacturer of finished plastics parts. Available to you is G. E.'s *complete* plastics service. Write to Plastics Divi-

sions, General Electric Co., I Plastics Avenue, Pittsfield, Mass. We shall be glad to send you upon request a copy of the new illustrated booklet, "What Are Plastics?"

#### G-E Complete Service — Everything in Plastics

Backed by 51years of experience. We've been designing and manufacturing plastics products ever since 1894. G-E Research works continually to develop new materials, new processes, new applications.

No.1Plastics Avenue —complete plastics service—engineering, design

and mold-making. Our own industrial designers and engineers, working together, create plastics parts that are both scientifically sound and good-looking. Our own toolrooms are manned by skilled craftsmen—average precision mold experience, 12 years.

All types of plastics. Facilities for compression, injection, transfer and cold molding . . . for both high and low pressure laminating . . . for fabricating. And G-E Quality Control—a byword in industry—means as many as 160 inspections and analyses for a single plastic part.





#### "Know-How" Information, Continued USE COUPON

"Substitution of An Abrasive Belt for the Grinding Wheel", "Polishing and Grinding Irregular Surfaces", "Vertical Belt Sanders," "The Use of Coolants," "Sanding Small Pieces."

☐ 40. WRENCHES — "Red Ratchet" wrenches are detailed in bulletin issued by Lowell Wrench Co. Lowell's wrenches are said to be the only ones that have an absolute crushing action on straight pawls—"the strongest construction that can be had". Various types of reversible ratchet wrenches are illustrated.

☐ 41. PRODUCT DEVELOPMENT — Bulletin entitled "Product Development and Fabrication" describes services and facilities of Corbin Screw Corporation for making screw machine products, cold upset products, and assemblies. Illustrations show types of work done.

☐ 42. PLASTICS — Here's a booklet you should have in your files, for it illustrates the many products made by the Plastics Division of the Waterbury Companies. Knobs of numerous types, with or without inserts, bushings, plastic electrical parts, electrical switch parts, terminal blocks and terminal parts, insulators and insulator parts, coil forms, and spools, bases and cases, sockets and plugs and many other parts are shown.

☐ 43. INSECTICIDES — The "Thanite Family" is title of textbook on Thanite, DDT, and derivatives and combinations of both these insecticide concentrates, available from Hercules Powder Co. It contains considerable new information on the use of these concentrates in household sprays, livestock sprays, flea powders and dips and in pest control and pediculosis control. Test data on toxicity of Thanite is included.

☐ 44. LOADING DOCK LIFTS — Bulletin describes the Globe loading dock lift, for handling materials from ground to platform or truck floor levels. Standard hydraulic lift has platform 6' x 8', and capacity of 6,000 lbs. live load; lifting weight is 54" maximum. Lift may be raised and used for "run-over" traffic where conditions necessitate. Globe Hoist Co.

☐ 45. POSTURE CHAIRS—Do/More wood and metal posture chairs for general office and executive office use, are described in booklet available from Domore Chair Co. Chairs are scientifically designed, including dimensions and shape of seats and back rests as well as provision for adjusting them, to aid the user to sit in good posture.

1 46. CHAINS — Catalog 41 issued by Nixdorff-Krein Manufacturing Co., gives specifications for and illustrates welded and weldless chains, tire chains for passenger cars, trucks and tractors—coil, twist link, loading, crane and steam shovel, dredge, boom, railroad switch, and brake chains, mine car couplings and links, chain dogs, ring dogs, sprocket wheel chain, utility chains, machine chain, and other kinds.

☐ 47. COATED FIBERGLAS CLOTHS—This bulletin contains swatches of Neoprene-coated, Neoprene and aluminum pigment, and vinyl coated Fiberglas cloth. Synthetic rubbers, vinyl compounds, synthetic resins and other materials are being used for coating Fiberglas cloth, which is woven from yarns of extremely fine strong, flexible filaments of glass. Fiberglas cloths are inorganic, noncombustible, nonstretching and nonshrinking; resistant to oils, corrosive vapors and common acids. They are also featured by unusual tensile strength. Uses from curtains to golfbags, gaskets, water storage tanks, protective clothing, high temperature belting, etc, etc., are suggested.

☐ 48. PLASTIC ADVERTISING Specialties—You may have been requested to buy material of this kind. The Emeloid Co. has just issued a new 24-page catalog entitled "Plastic Advertising Specialties of Distinction" which describes the products and services of this company.

☐ 49. HYDRAULIC CYLINDERS — A 32-page illustrated catalog tells about new standard "Rotocast Hydraulic Cylinders" for incorporation in hydraulic products and use in manufacturing and processing plants. The book gives complete specifica-

tions and engineering data on the various available cylinder types, suggests methods of application, and information on designing hydraulic circuits. Accessory equipment is also illustrated. Logansport Machine Co., Inc.

☐ 50. POWER FACTOR REGULATOR — The Haug System Power Factor Regulator is described in bulletin issued by Modern Control Equipment Co. Maker states the system will raise the power factor by taking the magnetizing current off the line with a negligible cost of operation and reduce the monthly power bill. There are no moving parts. Made under AIEE specifications and NEMA Standards.

☐ 51. FRANK ADAM'S PRODUCTS—You are familiar with the electrical products of the Frank Adam Electric Company—service equipment, panelboards, enclosed switches, duct, switchboards, floor boxes, fan hangers, pull boxes, junction boxes, etc. Therefore you may want the new catalog made up of specific bulletins on these products, which are contained in a Heinn Velocity Binder.

□ 52. WELDING & BRAZING — Industrial Welding and Brazing Products catalog, 1B, just issued by the Stackpole Carbon Co., gives full details and helpful data on welding electrodes, plates, rods, paste, resistance welding tips and other products for industrial use. It also describes the Stackpole F-treated carbon brazing tips which operate "satisfactorily at temperatures above red heat, and reduce dressing time by as much as two thirds."

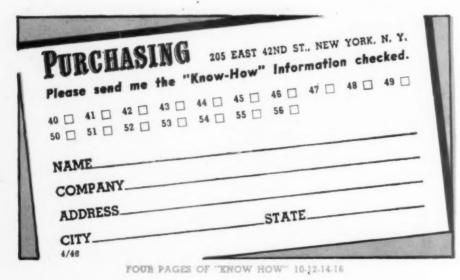
53. BRIDGE RAMPS—Ramps for modern car loading known as the "One Man Bridge Ramps" are described in bulletin issued by the Elizabeth Iron Works. This heavy-duty, ramp is said to be light in weight and featured by ease of maneuverability. It can easily be moved from place to place by fork truck and set in place with only attendant operator.

□ 54. SCREW MACHINE WORK—Silent stock tube is described in folder No. 1245 issued by Corlett-Turner Co., which illustrates tube in use on both single and multiple spindle automatic screw machines. It is said to successfully eliminate the clatter caused by revolving bar stock. It consists of helically wound steel liner which is covered by sound absorbent material, and encased in steel stock tube. 18 standard sizes ranging from bar capacity of ½" to 2%" available.

☐ 55. LIFT TRUCK—Hyster 4000 pound industrial lift truck (tricycle wheel mounting) on pneumatic tires is described in bulletin just issued by the Hyster Company. It is gas powered; wheel base 56", length overall less load arms, 86"; overall width 42"; lift to underside of load, 108"; rugged, one-piece steel body is also the frame; all working parts readily accessible.

☐ 56. FREE SAFETY MATERIAL — This is in the form of pay envelope inserts supplied by the makers of Hy-Test Safety Shoes, as supplementary material for a plant's regular safety program. They may

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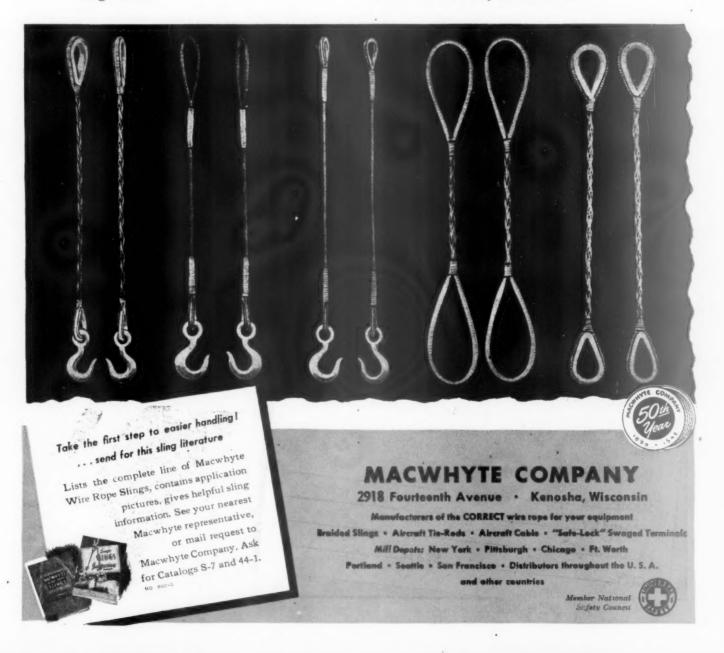
14

## MAKE MACWHYTE YOUR HEADQUARTERS FOR WIRE ROPE SLINGS

For safe, flexible, easy-to-use slings, call a Macwhyte representative. The advice and counsel of our engineers is always available to help design the correct slings for your job . . . slings that help production and reduce your handling costs.

To assure you of maximum service, we use our best grade wire rope. Skilled craftsmen fabricate it into slings that meet the most exacting specifications.

Your needs are our first consideration. Macwhyte Distributors and Representatives are at your service.



#### "Know-How" Information, Continued USE COUPON ON EACH PAGE

be used as "wrap-ups" with purchases at plant store or commissary. One side con-ries pertinent safety message. On the opposite side are reproductions of the large safety posters also furnished without charge by Hy-Test. All you have to do is to advise how many you can use each month. Hy-Test Division, International

57. MOTORS—Two-color brochure, No. FB, offered by Electric Indicator Co., makers of fractional hp motors and generators, describes typical Elinco units in the "FB" frame designed to allow both frame and base mounting. Permanent magnet ac and de generators; split-field de motors, permanent magnet dc motors, series and universal motors, and shunt-wound do motors are pictured and described in de-

□ 58. DRILL JIG BUSHINGS — Bulletin 11882-A describes Ex-Cell-O drill jig bushings, A.S.A. standard. Bushings are held to close limits. For each hole size there are three standard lengths. Bushings up to and including 4" hole size are made of high grade material with Rockwell hardness of 62 to 64 maintained in hole of bushings. Ex-Cell-O Corporation.

59. MEASUREMENT & CONTROL-Catalog 370 presents the Foxboro Company's full line of recording and indicating instruments for measurement and control. The sections deal with instruments for temperature applications, pressure, humidity, flow, level, density and other process variables. Catalog includes the company's line of Dynalog electronic instruments.

60. CASE HARDENING—Case hardening in Surface Combustion Standard rated furnaces is described in new 4-page bulletin SC-127 just issued by Surface Combus-tion Corp. Application of pack, liquid and gas carburizing is covered and ideal types of furnaces for various methods are indi-

☐ 61. METAL PROTECTOR — Fluid-type deadener, Witco No. 77 Metal Protector, designed for the protection of fenders, chassis, and underbody members of automotive products, is described in circular issued by Witco Chemical Co. It is said to have remarkable abrasion and crack resistance, as well as good seam sealing, thermal insulation and deadening proper

62. FLOOR MAINTENANCE - "Beautiful Floors" is title of brochure issued by General Floorcraft Inc., describing its floor maintenance machines and accessories. Model K is recommended for factory and institutional use or where floor maintenance

63. STEAM DETERGENT CLEANING Booklet issued by Oakite Products, Inc. describes applications of steam detergent cleaning for machinery and parts, preparing equipment surfaces for repainting, cleaning equipment too large for tank immersion, or paint stripping. Savings of 50% of former costs are reported on some operations.

64. NON-SLIP COVERING - Wetordry Safety Walk for all non-slip purposes, which is said to be slip-proof in all weather in all places, is described in bulletin on "Real Protection Against Slipping" issued by Minnesota Mining & Manufacturing Co. Three grades are available—Fine, Medium and Coarse.

☐ 65. RETAINING RINGS—They are used to save weight, space, cost and time in wide range of products, such as holding and positioning of machine parts. Samples and complete data available. Kohinoor, Inc.

65. DIAMOND ABRASIVES — Bulletin 1980 contains full information on Bay State resincid, metal, and vitrified bonded diamond abrasives.

Ge. SNAP-ON TOOLS - Catalog describes 3000 modern snap-on tools. These tools are claimed to promote safety, cut costs and improve workmanship. Snap-On Tools Corp.

67. RELAYS - New Relay Catalog shows many basic relay types, complete of solenoids, magnetic contractors, switch parts, together with operating data, suggested applications. specifications. Guardian Electric.

68. SHIPPING CONTAINERS — Catalog shows the entire line of Mason Mailmasters which are said to make for maximum protection and economical shipping. This box has patented wire closures. Mason Box Co.

69. VACUUM PUMPS - If air-power is used in your plant, you should have Gast catalog which describes Gast vacuum pumps, compressors and air motors. Company offers trial service without obligation. Gast Manufacturing Corp.

70. CENTRIFUGAL CASTINGS - Bulletin No. 143 gives complete information about Shenango-Penn Centrifugal castings, including chemical and physical analyses and specifications of various alloys available. Castings are said to be free from porosity, blowholes, sand inclusions or other structural weaknesses. Shenango-Penn Mold Co.

71. PLIERS, NIPPERS, Etc. - Catalog describes the Bernard line of pliers, nippers, punches, cutters and results to industrial use. You should have copy of industrial use. Your file. Wm. this hand tool catalog in your file.

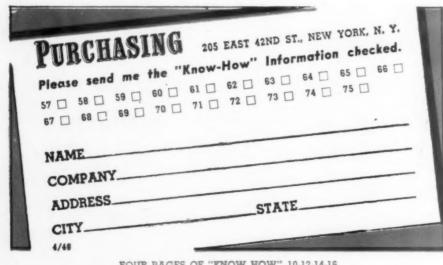
71. PALLETIZED LOADS -Loads" is title of booklet available from National Adhesives, which tells about the advantages and prevention of breakage and pillerage made possible by glued loads. Glue cost is said to be insignificant.

72. GASKETS, Seals-"Gaskets, Packings and Seals" is title of bulletin available from Gaskets and Packings Department of Armstrong Cork Co. It describes molded rubber parts and parts molded from Neoprene, Buna N, Buna S, Thiokol or other synthetic materials.

☐ 73. TEMPERATURE REGULATORS — Circular 2511 describes Powers temperature regulators. Various dials and ranges are available. Installation requires only one Various dials and ranges are tapped opening. The Powers Regulator

☐ 74. PORTABLE PUMPING UNITS—Units for pumping coolants and cutting oils, lubricants, solvents, quenching fluids, inks and paints, and other fluids and solutions, are described in bulletin available from Gray-Mills Co.

75. FLEXLASTICS — Bulletin describes Manhattan Flexiastics, and their use in belting of all kinds, oil hose, and tank linings. Flexlastics are compounds of natural and synthetic rubbers, age-resisting chemicals, pigments, fillers, etc., and are featured by flexibility, tensile strength, dielectric properties, resistance oils and chemicals, aging, sunlight and abrasion and wear. Raybestos-Manhattan Rubber Pivn. Raybestos-Manhattan, Inc.,



FOUR PAGES OF "KNOW HOW" 10-12-14-16



SKILSAW, INC., 5033-43 Elston Ave., Chicago 30, III.
Factory Branches in All Principal Cities

PORTABLE ELECTRIC

SKILSANDERS

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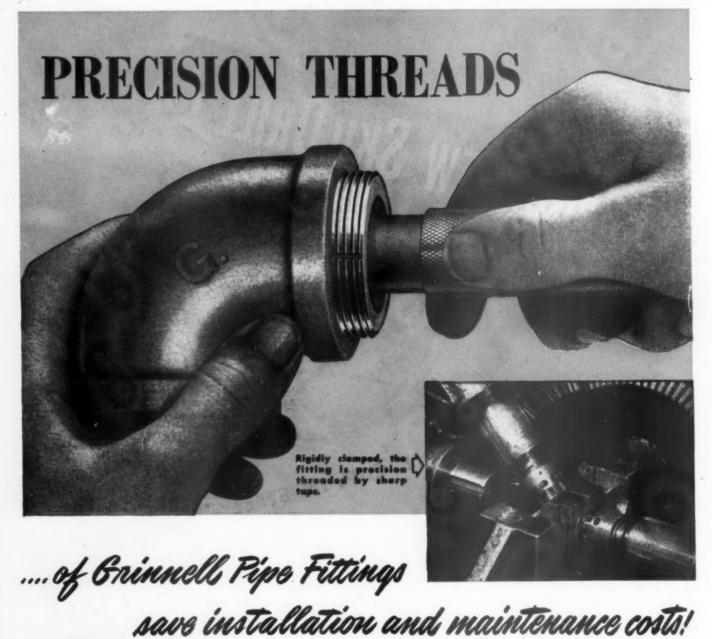
SKILSANDERS

SKILSANDERS

SKILSANDERS

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SKILSANDERS



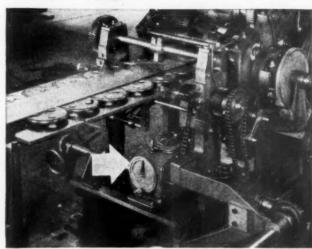


The strict standards to which Grinnell manufactures every pipe fitting insure sharp, clean, precision-cut threads. This feature is demonstrated by the way Grinnell Pipe Fittings take hold, run up and tighten uniformly to make permanent, leak-proof joints. Precision threading machines operated by experts assure the maintenance of these high standards.

This is but one of the advantages you obtain – at no extra cost – by specifying Grinnell Pipe Fittings. They are the extra values that cut installation and maintenance costs. Identify these good fittings by the Grinnell "G" trade mark. Available through branch warehouses and jobbers everywhere. Write for Catalog 5-B. Grinnell Company, Inc., Executive Offices, Providence 1, R. I.

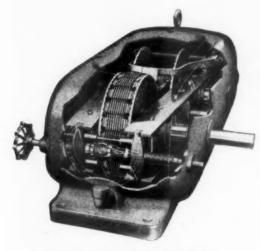


## Accurate Speed



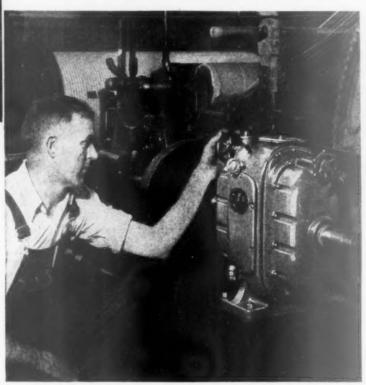
Above: P.I.V. Gear on Weber Paper Bag Machine regulates the speed of the cutting-off device, which determines the exact length of bag.

Right: Link-Belt P.I.V. Gear applies to slasher. In mills where P.I.V. Gears have been applied for stretch control on slashers, tests show that the yarn retains its elasticity after slashing. Tests made in the weave room of one mill showed an increase in loom production due to less breaks and fewer loom stops. Production reports for weaving before P.I.V. was installed, showed 91.5%. After the change-over to P.I.V. slasher stretch control, the report showed 93.5% or an increase of 2%.



Get any speed instantly—maintain it accurately with this positive, infinitely variable speed changing unit.

GOVERNS QUALITY, LINK-BELT PI.V. GEAR is the Auswer!



roducts and processes may differ widely, but if precise speed is a factor in the result, the same unique P.I.V. Gear speed changer will furnish the means. With this unit, power is transmitted positively through an all-metal chain, making tooth-to-tooth contact with metal wheels. Speeds can be varied infinitely within full range of the unit, and once selected, the chosen speed is maintained accurately. Speed is changed while the drive is running by a small handwheel, or by automatic or remote control.

Precise positive speed control in any type of industrial application can be obtained by means of the P.I.V. Gear. Built in a wide range of sizes and types, fully described in Book 1874. Send for a copy.

#### LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and Distributors in Principal Cities.

10,209



POSITIVE INFINITELY VARIABLE SPEED CONTROL

## New Progress -



## IN HOT-WOUND SPRINGS

We've learned more lately about one of our specialties—Hot-wound springs. Sudden war-time need of these springs mounted to numbers never dreamed of —so production methods had to be reorganized, enlarged, coordinated. Mechanized warfare, too, called for much closer tolerances, increased precision—

resulting in new exploration of metallurgy, heat-treating and testing. This swift advance in production and engineering skill gives today what may not have come for some time—capacity to turn out larger quantities of hot-wound springs to closer tolerances. In terms of your requirements—better service . . . better performance.

#### The WILLIAM D. GIBSON CO.

DIVISION OF ASSOCIATED SPRING CORP.

1800 Clybourn Avenue, Chicago 14, Illinois

#### GIBSON-SPRINGS

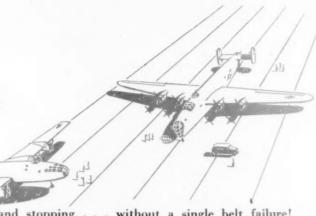


FROM LANDING MATS
TO AUTO PARTS

#### DAYTON V-BELT DRIVE

of starts and stops of huge press that exerts pressure of 192 tons

All during the war this huge mechanical press helped, to make landing mats for emergency airfields. Now it is turning out auto parts. During these years this press has delivered its 192-ton blow tens of thousands of times. And each time the six Dayton V-Belts have helped to absorb the shocks of starting

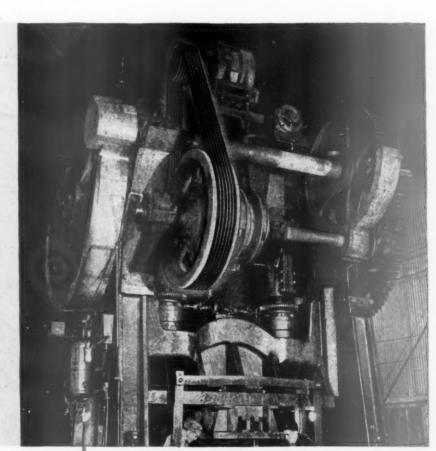


and stopping . . . without a single belt failure! Dayton V-Belts can stand such hard service because they are engineered to perform tough jobs, and built of specialized rubber for the particular work they have to do. Preferred by industry for power transmission drives, Dayton V-Belts can also solve your power drive problems. Write

THE DAYTON RUBBER MANUFACTURING COMPANY
DAYTON 1, OHIO

#### ATTENTION POWER TRANS-MISSION ENGINEERS:

There is a mill supply house near you that stocks Dayton V-Belts. A representative of this organization will gladly discuss your power transmission drive problems with you. Look for this company under the trade name listing, "Dayton V-Belts" in the yellow pages of your telephone directory.



WRITE FOR THIS DAYTON CATALOG TODAY:

The Dayton No. 280 Catalog has 384 pages of data that make selection of Dayton V-Belt Drives simple and easy. It's free. Write The Dayton Rubber Manufacturing Company, Dayton 1, Ohio.



Dayton Rubber

### Proflem TROUBLE-SHOOTING with SEAMLESS STEEL TUBING

#### THE PROBLEM:

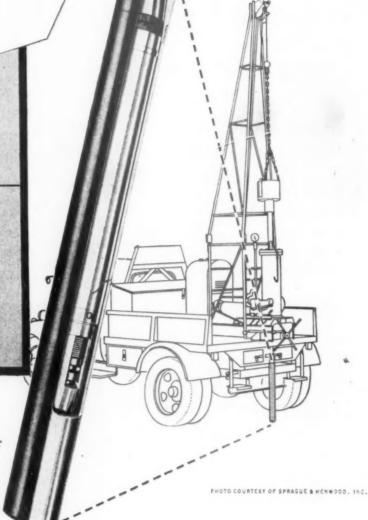
To provide for soil samplers, core drills and drilling equipment, steel tubing capable of withstanding unusually severe stresses, yet light enough to permit quick, easy handling in drilling operations.

#### THE ANSWER:

Combining inherent strength - without - weight advantages with uniform quality that permits precision machining of complicated structural details, OSTUCO Seamless Steel Tubing is used in the manufacture of soil samplers, core drills, drill rods, reamer couplings and blank bits.

#### Soil Sampling...

Securing an undisturbed sample of soil for testing to determine its permeability and loadcarrying capacity, has made possible the analysis of many difficult soil and foundation problems. Here, as in countless other industries, The Ohio Seamless Tube Company's sincere desire to assist in solving difficult engineering problems has proved invaluable. Manufacturing skill and experience\*, strict adherence to the most exacting inspection tests, on-time delivery and a remarkably low record of rejects are additional OSTUCO qualifications. Write today to the nearest sales office for complete information . . . ask for the interesting booklet, "M-1," containing helpful information on steel analyses, tolerances and machining methods.





This is Joe Laubie, Sr., one of several members of the Laubic family employed by OSTUCO. and a member of OSTUCO'S 50-Year Club. Craftsmen like Laubie take a particular pride in the quality of the work they turn out, a personal trait that carries on the OSTUCO tradition of excellence, a tradition that dates back to the beginning of tube-making in America.

#### THE OHIO SEAMLESS TUBE COMPANY

SALES OFFICES: Chicago 6, Illinois, Civic Opera Bldg., 20 North Wacker Dr.; Cleveland 14, Ohio, 1328 Citizens' Bldg.; Detroit 2, Michigan, 2857 E. Grand Blvd.; Houston 2, Texas, 927A M & M Bldg.; Los Angeles, Calif., Suite 200-170 So. Beverly Drive, Beverly Hills, California; Moline, Illinois, 225 Fifth Avenue Bldg.; New York 17, New York, 70 East 45th Street; Philadelphia 9, Pa., 123 S. Broad St.; St. Louis 6, Missouri, 1230 North Main St.; Seattle, Washington, 1911 Smith Tower; Syracuse, New York, 501 Roberts Ave.; Tulsa 3, Oklahoma, Refining Engine & Equipment Co., 604 Ten E. 4th St. Bldg.

Canadian representative: Railway & Power Engineering Corp., Ltd. Hamilton, Montreal, Toronto, Vancouver, Windsor and Winnipeg.

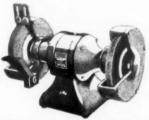


Plant and Main Office SHELBY, OHIO They Do More... Better... Faster

"WHIRLWIND" WIRE BRUSHES CUT COSTS, STAND UP LONGER ON HIGH SPEED WORK



wire for rough cleaning, .0118" wire for high-speed buffing, .005" wire for fine finishing and burnishing.



For Stationary Grinders: Whirlwind Brushes come in three thicknesses, in six wheel sizes from 4" to 12". Can be used on many types of machines. Adaptors fit them to 'most any arbor



Sanders: Whirlwind Wire Cup Brushes make quick work of removing rust, scale, old paint; cleaning castings, structural metal, tanks,

boat hulls, other surfaces. in 4", 5" and 6" sizes.

\* Trade Mark Reg. U. S. Pat. Off.



EVELOPED and made by Black & Decker for high speed work, Whirlwind Wire Wheel Brushes are definitely better, tougher, work faster and last longer. That's because crimped wire gives Whirlwind Brushes extra life and spring . . . assures correct clearance between wires . . . holds the brush in an even, compact mass. And each individual tuft of wire is held in a ring of steel . . . separately . . . securely . . . to stay. Whirlwind Brushes are available in wheel sizes from 4" to 12" in three thicknesses, and in three gages of

wire . . . for use on almost any grinding, buffing or polishing machine and on all Black & Decker Portable Grinders, Bench Grinders and Sanders. Try Whirlwind Brushes now. Order them from your Black & Decker Distributor. Compare the service and satisfaction Whirlwinds give you with brushes of any other make.

For our complete catalog of more than 100 different Black & Decker Portable Electric Tools and over 1,000 attachments, write to: The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Md.

LEADING DISTRIBUTORS EVERYWHERE SELL ock & Decker

PORTABLE ELECTRIC TOOLS



Pick up your Profits with Corbin Screws

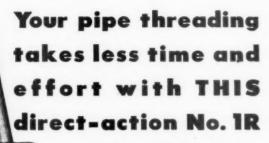
"You can. reach for a Corbin Screw blindfolded—and get a good one

If all screws were exactly alike you could buy 'em anywhere and use them blindfolded. But keeping screws alike calls for never-ending vigilance. Here at Corbin we change dies before they are worn. We keep our saws and cutters sharp, and maintain very thorough inspection.

That's why we recommend Corbin Screws — Regular Slotted or Corbin-Phillips — to any manufacturer who would like to get more assembled parts per hour



every time!"



RIBRID

Threads 1" to 2" pipe Full-floating posts

Bushingless, quicksetting workholder



• If you prefer a poster threader, here's an improved one that's ready to thread 1", 11/4", 11/2" or 2" pipe most quickly and with least bother. Quick-set foolproof workholder has no bushings to bother with. No cockwobble in threading -handle pulls head and dies directly, floating posts merely taper thread, do no driving. Alloy or high-

speed steel chaser dies cut clean perfect threads, steel and malleable construction assures long service - and it sells at a popular price! . . Buy No. 1R at your Supply House.

Cut your pipe cleanly with more ease and speed with this new efficiency-balanced 

PE CUTTER

. with fast-action thin-blade cutter wheel

• Slap this new RIDGID Cutter on a pipe, turn it tight and roll it right through your pipe in a few easy turns — thin wheel leaves practically no burr. You like the well-balanced feel of its new style malleable frame and the thin blade tool-steel wheel always cuts true-every cutter individually tested to assure it. Your choice of 5 sizes to 6" capacity and 4-wheel cutters to 4." For easier pipe cutting order RIDS, at your Supply House.

4-wheel No. 42 for fast quarter-turn cutting.

Millions of RIDOID Tools in use

WORK-SAVER PIPE TOOLS

The Ridge Tool Company Elyria, Ohio, U.S.A.

### This plant burns atoms

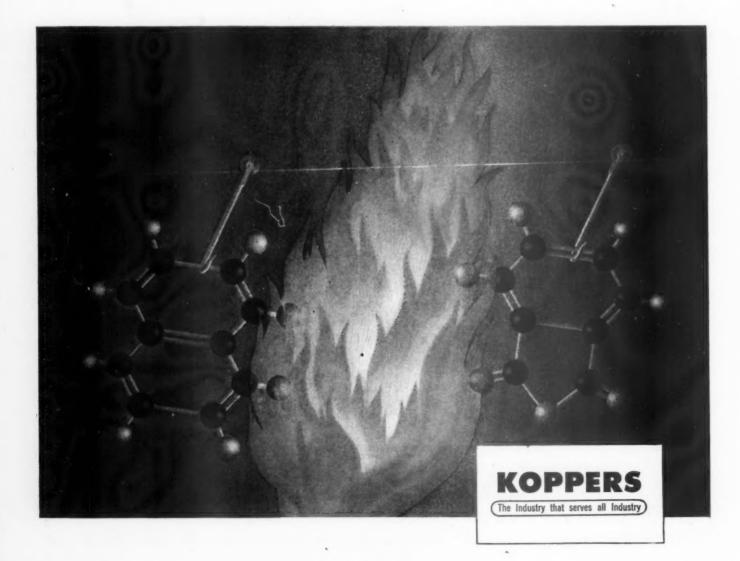


THIS IS A PHTHALIC ANHYDRIDE PLANT. Starting with naphthalene (the material which is familiar to the public in the form of moth balls) it "burns off" by a chemical process two of the carbon atoms (the black ones in the sketch), and four of the hydrogen atoms (the orange ones) and it adds three oxygen atoms (the gray ones). The result is a very useful chemical called phthalic anhydride.

Phthalic anhydride is serving you in many ways. It is one of the ingredients in the new one-coat paint which is mixed with water and applied right over old wallpaper or plaster. It is one of the ingredients in the tough, high gloss finishes which are familiar

on automobiles and refrigerators and which will become more and more widely used in other painting applications now that the war is over. It goes into many medicines, into inks and dyes. During the war it was used in an insect repellent to protect soldiers in the jungles.

This plant was built by the Engineering & Construction Division of Koppers, and is operated by the Tar & Chemical Division. It is only one of the chemical plants built by Koppers and it manufactures only one of the many coal tar chemicals produced by this company—Koppers Company, Inc., Koppers Building, Pittsburgh 19, Pa.



## "BECAUSE MORSE TOOLS HOLD UP SO WELL, REPLACEMENTS ARE HELD DOWN TO A MINIMUM"



MORSETHERE IS A DIFFERENCE

MACHINE COMPANY

NEW YORK STORE: 130 LAFAYETTE ST. . CHICAGO STORE: 570 WEST RANDOLPH ST. . SAN FRANCISCO STORE: 1180 FOLSOM ST.



NO JOB TOO TOUGH FOR A

#### RUGGED IS WIH CONVEYOR BELT!

Over 15,594 tons of copper ore daily . . . for 2,256 days . . . that's the record of a Bull Dog Conveyor Belt in one of America's great copper mines.

That, the operators told us, is a record to be proud of! But, our records show that similar dependable service is being rendered by other BWH belts in all types of industry from coast to coast . . . and at lower maintenance cost. Such ruggedness is due to the exclusive BWH ROTOCURE process of continuous vulcanization.

The dependability of BWH for produc-

ing conveyor belts and other products of

remarkable toughness has established it as a leader in the industrial rubber goods field. So depend on BWH for dependable ruggedness . . . on BWH distributors for dependable service.

HAVE YOU A JOB WHERE STAMINA COUNTS? Bring us your toughest problems . . . we're specialists in solving them. Consult your nearest BWH distributor. or write to BWH direct.



BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in All Principal Cities

WORKS: CAMBRIDGE, MASS. U. S. A. . P. O. BOX 1071, BOSTON 3, MASS.

This
POWER ALLEY
Was A Constant
"Headache"

The "power alley" in this mill was eating up money before Fafnir Ball Bearing Pillow Blocks replaced plain bearings on these high-speed spinning frames. Lubrication cost was excessively high – and due to liberal lubrication, leakage of oil on expensive belting caused it to wear out long before its time. Much yarn was lost as the result of thrown oil. Besides, yarn residue, dripping oil and friction made a perfect set-up for a fire.

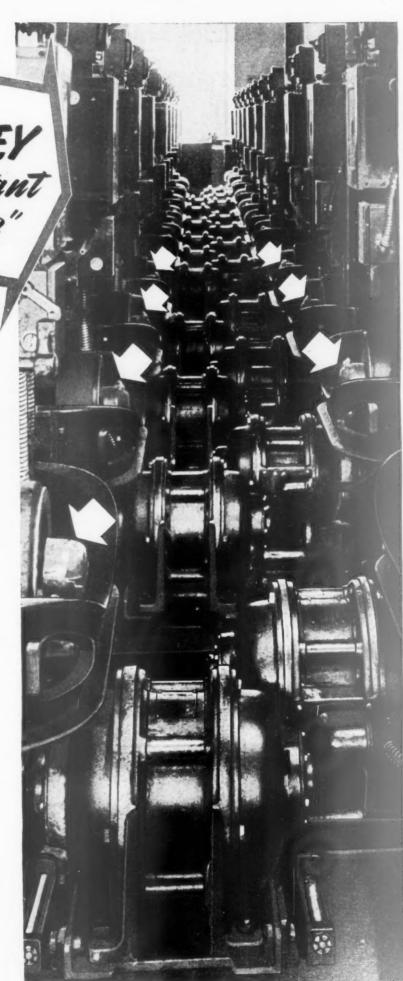
The substitution of Fafnirs reduced starting and running torque on the high speed shafts and cut power loss to a minimum. Because the Fafnir units required lubrication only twice a year, belt slippage and belt wear were practically eliminated – saving power, labor and money. The clean running Fafnirs prevent spoilage of yarn.

This "turning point" to power conservation and the reduction of operating costs and trouble was quickly and easily made. Simplified installation made possible by the Fafnir Wide Inner Ring Bearing with exclusive Self-Locking Collar—no machining, shaft shoulders, or lock-nuts required—eliminated lost production time.

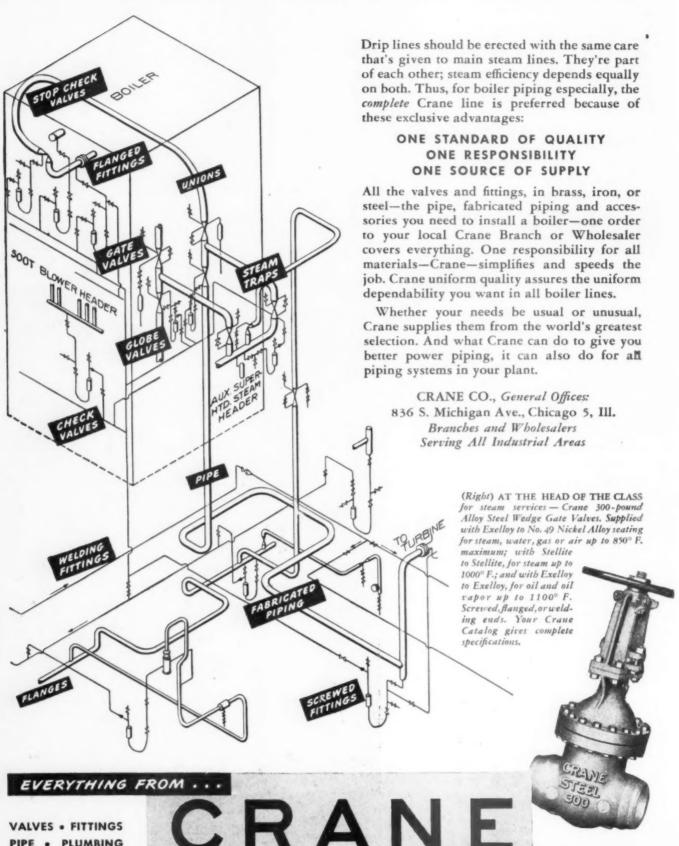
Have you considered what the substitution of Fafnir Ball Bearings might do for your power wasting drives? The Fafnir Ball Bearing Company, New Britain, Conn.

#### FAFNIR Ball Bearings

You'll find it pays to call your INDUSTRIAL SUPPLY DISTRIBUTOR



#### **All Drip and Drain Piping** ... from the Complete Crane Line



PIPE . PLUMBING **HEATING . PUMPS**  CRANE

FOR EVERY PIPING SYSTEM



mustration prepared with cooperation of Ferrel-Birmingham Co., Inc., Ausonia, Conn

Get this Complete
Lubrication Program for
all your machines

- Lubrication Study of Your Entire Plant
- Recommendations to Improve Lubrication
- Lubrication Schedules and Controls
- Skilled Engineering Counsel
- Progress Reports of Benefits Obtained

TOP PROBLEM now facing factory executives is how to keep machine production up . . . and costs down. This cutaway picture of a Banbury mixer chewing up rubber, shows the vital importance of Correct Lubrication in the solution of this problem.

Here in this mixer, as in many machines in your plant, the main bearings work under heavy pressures, frequently at high temperatures. Socony-Vacuum tailors special lubricants to meet these conditions, to reduce friction, wear and power loss. On those heavily loaded pinions and gears, special prescription lubricants cushion the shocks. Similarly, special oils protect dust stops and couplings.

No matter what machines you're operating, Socony-Vacuum's Complete Lubrication Program gives you the right oil or grease for every moving part. Yes, and you also get the additional services listed at the left. Ask for this sure way to mix greater production with economy.



Socony-Vacuum Oil Co., Inc.

and Affiliates: Magnolia Petroleum Co. . General Petroleum Corp. of Calif.

TUNE IN "INFORMATION PLEASE"-MONDAY EVENINGS, 9:30 E.S.T.- NBC



. . . because producers of oxygen have maintained continual research and development work in its application, to assure not only efficient and economical use of it in day to day operations, but to further new uses of oxygen for lower cost production of goods.

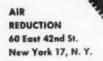
> As a result of this, oxygen is an indispensable servant of all industry and will become increasingly important in the production era of the future.

> Today Airco is using all its facilities to accelerate progress in research

and development. Its technical staff, which introduced such processes as flame scarfing, flame gouging, flame cutting, flame cleaning, will, in the future, develop new and better applications of existing processes and, in addition, extend the use of oxygen to fields yet unexplored.

Airco looks to the future!

An interesting booklet, "Oxygen-Indispensable Servant of Industry", is yours for the asking. Fill in the coupon, or write: Air Reduction, 60 East 42nd St., New York 17, N. Y. In Texas: Magnolia Airco Gas Products Co., Houston 1, Texas.



Send me your booklet: "Oxygen - Indispensable Servant of Industry".



#### AIR REDUCTION

Offices in All Principal Cities

ORIGINATORS OF MODERN OXYACETYLENE METHODS FOR THE METAL WORKING INDUSTRY

Signed by.



. . . you can rely on CLEVELAND Drills and Reamers



The Reason this Fact for this worth knowing

## Your GATES VULCO ROPES are Today Making Performance Records NEVER EQUALED Before!

No V-belts built by anyone before the war had anywhere near the strength and durability that was found necessary on U. S. Army tanks, tractors and self-propelled big guns in combat service. Gates developed these greatly superior V-belts for Army use—and here is why this fact is important to industrial users of V-belts:—

the reason

Every improvement developed by Gates for U.S. Combat Units—and many later improvements, also—have been added, day by day, to the quality of the Standard Gates Vulco Ropes which have been delivered to you.

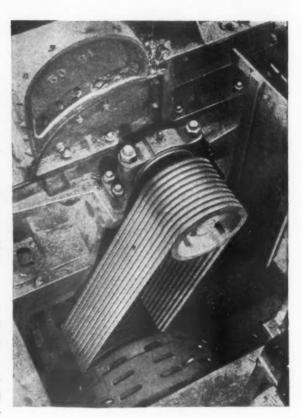
That is why, long before the war was over, you were getting in your Standard Gates Vulco Ropes a product built to far higher service standards than any V-belts ever built by anyone before the war.

And that is not all of the story. Through continuing *specialized* research, the service qualities of these superior Gates Vulco Ropes have been still further improved as all of Gates facilities and energies have been returned to the service of industry.

These are the simple reasons why the standard Gates Vulco Ropes you are getting today are far and away the best V-belts Gates has ever delivered to you.



Engineering Offices and Jobber Stocks in All Large Industrial Centers







464

GATES VULCO DRIVE

CHICAGO 6, ILL., 549 West Washington. NEW YORK CITY 3, 215-219 Fourth Avenue. ATLANTA 3, GA., 521 C. & S. Nat'l Bank Bldg.

LOS ANGELES 21, CAL., 2240 E. Washington Blvd. DENVER 17, COLO., 999 S. Broadway. DETROIT 2, MICH. 223 Boulevard Bldg.

PORTLAND 9, ORE., 333 N.W. 5th Ave. DALLAS 2, TEXAS, 1710 N. Market St. SAN FRANCISCO 3, CAL., 170 Ninth St

#### How to know Fluorescent Lamps from the inside out . . .





#### You could break off the end

looking alone isn't enough. If you're as careful as General Electric, you'd have to make 480 tests and inspections to be absolutely sure of the quality of the lamp. You'd have to study the "coiled-coil" tungsten cathode, which helps determine how many times the lamp starts; you'd have to measure the quality and quantity of the chemical coating on the cathode, which has an important bearing on lamp life; you'd have to test the tightness of the glass-to-metal seal, because even a tiny leak will soon reduce light output. And that would just be the start.

#### . . . Or you can insist on the 🎡 mark

on the fluorescent lamps you buy for your office and plant. Everything that goes into a G-E fluorescent lamp is carefully tested—every completed lamp goes through a series of exacting tests—to assure you of perfect performance. \*And remember—General Electric lamp research is constantly at work to improve G-E lamps and make them Stay Brighter Longer.

G-E LAMPS
GENERAL BELECTRIC

# Stop Liner Breakage!





CRINKLED AND PLEATED

#### THEY S-T-R-E-T-C-H IN EVERY DIRECTION

BIG NEWS for users of liners. Chase C. & P. Liners are crinkled for vertical elasticity and pleated for horizontal elasticity. It's the protective feature which provides plenty of flexibility in all directions! Result: no more broken liners nor costly damage to contents due to liner failure or breakage.

Write today. Let us tell you more about Chase Crinkled and Pleated Liners-it's the better liner that actually costs no more!



## CHASE

**GENERAL SALES OFFICES** 307 WEST JACKSON BLVD., CHICAGO 6, ILL.

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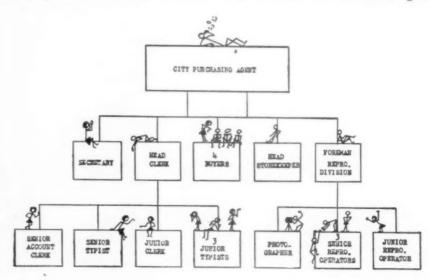
UT in Portland, Oregon, Gentry W. Yates was recently promoted from his position as City Property Custodian to the office of City Purchasing Agent. The following week the City Council entertained a motion to consolidate the two jobs.

IVE credit to Harry F. Wagner. Cincinnati's able City Purchasing Agent, for the most graphic and interesting organiza-tion chart of the year. It is reproduced herewith, in miniature, from the recently issued annual report of his department. In all fairness we should also quote the artist's note, assuring us that "Any similarity to any real persons is purely coincidental."

NCIDENTALLY, the record of the year's activities belies the representation of the P. A. taking his ease at the top of the chart, enjoying a fat cigar. The statistical summary shows a buying program involving more than 1,000 orders per month in addition to 225 formal contract agreements, accounting for expenditures of close to 3½ million dollars in 33 major categories. Every phase of the work-requisitions, purchase orders, informal

agreements, Board of Control recommendations, and formal contracts -shows a substantial increase over the previous year, ranging from  $5\frac{1}{2}\%$  to 27%. But it's not only a statistical report; in fact, it's a very human sort of document. It tells, for example, how the department combed three million square miles of territory in search of 31 urgently needed police cars, and finally succeeded in getting them. There's an illuminating commentary on OPA's "hold the line" policy on solid fuels, with successively authorized price increases becoming effective on February 16, May 1, August 6, August 22, and August 27. By way of illustration, a table shows the comparative prices on nine grades of coal and coke for 1942 and 1945, with increases ranging from 21% to 46.4%. And on the other side of the picture there's the story of penicillin prices, which plunged in the course of the year from \$6.00 to \$4.50 to \$3.50 to \$2.40 to \$1.54 to \$0.95 to \$0.85 to \$0.75 to \$0.70 to \$0.60 to \$0.48 per vial.

PURCHASING Agent Claude Black of Indiana University won a race against time by the proverbial eyelash, when he produced housing accomodations, beds and other furnishings to accomodate 1,400 additional Hoosier veterans who enrolled at the Bloomington



campus for the start of the February semester, many of them accompanied by their wives. Hous-ing facilities had already been strained by the arrival of 900 veterans during the previous term. Drafted to aid in the search and in cutting the red tape which frequently threatened to stymie the program were Governor Ralph F. Gates, the entire Indiana congressional delegation, and the University's board of trustees. The project involved the acquisition of a 300-unit trailer village, the moving and rebuilding of temporary dormitories from war plant areas at Jeffersonville and Sharon, Ohio, and the leasing of Bloomington's USO. No qualified Hoosier veteran desiring to enter the University was turned away.

MOST purchasing men will agree that theirs is the most interesting assignment in business, even if it is also one of the most exacting. In testimony, we present an item which appears under the heading "Buy Line" in a recent issue of the Westinghouse Newsfront:

Imagine being faced with a shopping list carrying these items: 10 milligrams of radium, one 75-ton steel forging, 25,000 miles of glass tape, 16,000 pounds of sugar, 700 pounds of vegetable shortening, and 800 gallons of molasses.

No, it's not the recipe for a new atomic bomb, but a few choice items from the list of materials that Westinghouse purchasing agents went shopping for last year. The entire list contained some 100,000 different parts and raw materials; and to get them required the services of 10,000 suppliers located in every section of the United States and eight foreign countries.

About a million dollars a day was spent for these materials. It went for copper cable as thick as your wrist and wire thinner than a human hair; for springs weighing from a mere one ten-thousandth of a pound up to 200 pounds; for 800,000 tons of steel, 80 million pounds of copper; and for many thousands of other items

Some critical materials required plenty of work and ingenuity to locate. One of these—a special metal vital to high-altitude aircraft devices—necessitated a search halfway around the world. After a feverish scouting of every possible source, involving cablegrams to Australia and a trip to an abandoned mine deep in the North Woods of Canada, adequate supplies of the material were obtained.

In case you're curious, the sugar is used as a lubricant in metal stamping, the molasses as a core binder in Westinghouse foundries, and the vegetable shortening as a lubricant for plastics. The radium, small enough in size to be placed under the fingernail, is used in experimental work at the Westinghouse Research Laboratories.

# AN IMPORTANT ANNOUNCEMENT

We are proud to announce the consolidation of the General Screw Manufacturing Company, Sterling Bolt Company of Cincinnati, and Badger Bolt Products of Milwaukee, with the Sterling Bolt Company of Chicago.

All units will operate under the name of the Sterling Bolt Company, 209 W. Jackson Blvd., Chicago 6, Illinois. Present offices will be maintained at Milwaukee and Cincinnati, and the sales personnel of all units will remain unchanged.

This consolidation is another of the many forward steps we have taken in our untiring efforts to insure increasingly better service on a most complete line of bolts, nuts, screws, rivets and washers.

Here, in one thoroughly coordinated organization, will be every facility for better and more effective fastening consultation, manufacture, warehousing and delivery. For you, the purchasing agent, there will be greater benefits than ever before in dealing with Sterling Bolt Company, for 25 years a foremost national supplier of bolts, nuts, screws, rivets and washers.



### STERLING BOLT COMPANY

CHICAGO, ILLINOIS—209 W. JACKSON BLVD.

MILWAUKEE, WIS.—161 WISCONSIN AVE.

CINCINNATI, OHIO—UNION TRUST BLDG.



All your most careful calculations, using the best available spring engineering formulae, may go for naught if you step into one of these treacherous pitfalls. Don't let experience in apparently similar cases deceive you, for the most trivial change in working space, loading and operating con-

ditions may upset all precedents.

It is the business of Cleveland Spring engineers, from over 70 years of experience with every kind and variety of spring applications, to discover the pitfalls in advance and find ways to avoid them, while keeping strictly within competitive cost limits.

# Cleveland SPRINGS

2012 West 25th Street, Cleveland 13, Ohio







Apply this abrasive-resistant, corrosion-resistant material to the under side of fenders, to knee actions, springs, frame, and all under-chassis parts... for protection against flying sand and gravel, road splash, and salt water.

Witco #77 is applied with standard mastic spray equipment and forms a tough, durable coating that scals seams and cracks, provides thermal insulation, and reduces vibration noise. Its effectiveness as a sound deadening compound recommends it for this use where corrosive or abrasive conditions prevent the use of other less resilient materials.

Witco #77 Metal Protector may be applied over bare, slightly oily, or painted surfaces and dries to touch in 10 minutes—hard in one hour. It may be safely baked at 275° after air-drying for five hours, or at slightly lower temperatures after shorter drying periods.

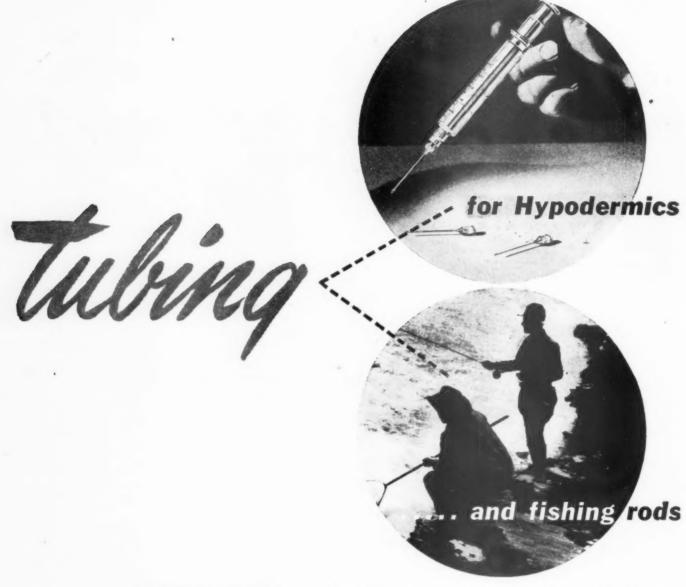
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And that's not all! Spray tubes and thermometers, instrument springs and fuel lines, syringes and denture braces, watch pinions and automatic pencil parts, phonograph needles and embalming needles . . . all of these things and dozens of others are made better and at lower cost from small size seamless tubing.

How small is "small size" tubing? Summerill regularly produces sizes from ½" OD down to .012" OD of all ferrous alloys including stainless. It can be furnished either cut or in random lengths, all bright finish and in any temper desired. And every foot of tubing we deliver has been subjected to strict laboratory control.

Perhaps small size seamless tubing can make your products stronger, better, or lower in cost. Write us, outlining your problem. We will be glad to contribute our engineering and metallurgical knowledge toward the development of tubing to a size and analysis best suited to your requirements.

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Affiliated with EDGAR T. WARD'S SONS CO. and COLUMBIA STEEL & SHAFTING CO.

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FOR TOUGHEST LUBRICATION JOBS
IN CARS, TRUCKS, TRACTORS AND STATIONARY ENGINES



- Resists Formation of Sludge, Lacquer, Carbon
- Removes Hard Carbon
- Stronger Protective Film
- Non-Corrosive—Safe
- Keeps Piston Rings Free
- Adds Power, Saves Fuel, Saves
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Accepted by Leading Engine Manufacturers as a Superior Lubricant.

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Naturalube D.H.D. is made from a rare and basically different crude oil which imparts to the finished product a stronger protective film...greater adhesiveness and penetrativeness... and ability to remove hard carbon deposits. By special processing, Naturalube D.H.D. is reinforced against the deteriorating effects of extreme heat and oxidation. Because of D.H.D.'s resistance to formation of deposits of sludge and lacquer, engines are clean-

er; rings and valves operate freely for longer periods; filters, screens and oil lines function normally. There is no hard-carbon scuffing; general engine performance is greatly improved; operating and maintenance costs are lower; shut-down time is minimized. D.H.D. is non-corrosive—safe. It saves wear, adds power and saves fuel. Try D.H.D.—Your money back if you don't believe it to be the best oil you have ever used.

\*For normal service where D.H.D. is not required, use Naturalube Motor Oil (not so heavily reinforced.)

#### POSITIVE MONEY-BACK GUARANTEE

For further information about Naturalube Oils, see the local Naturalube Distributor or write direct to Lion Oil Company, El Dorado, Arkansas.



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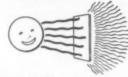


Employe eyestrain and fatigue due to sun glare interfere with efficient production... and increase labor costs. To reduce sun glare and heat is the assignment given to Blue Ridge Frosted AKLO Glass in the window areas of prominent American and Canadian industrial plants.

Pictured above is an installation of Frosted AKLO industrial glass in the plant of the De Laval Steam Turbine Company, Trenton, New Jersey, manufacturer of turbines, gears, pumps and centrifugal compressors. Expensive production machinery calls for the alert attention of expert operators. Proper glazing helps to keep the operator alert. Blue Ridge Frosted AKLO was installed in this plant "to reduce glare and heat" according to the maintenance superintendent.

Frosted AKLO is a blue-green, cool-appearing glass that cuts sun glare, spreads daylight evenly, retards entrance of much of the sun's heat...thus making workers more comfortable and conserving human energy by reducing eyestrain. Frosted AKLO is manufactured by the Blue Ridge Glass Corporation, Kingsport, Tennessee, and sold by Libbey Owens Ford through leading glass distributors. Ask your LOF distributor for a Radfometer demonstration of Frosted AKLO. For further information write to Blue Ridge Sales Division, Libbey Owens Ford Glass Company, 9846 Nicholas Building, Toledo 3, Ohio.

Frosted AKLO



REDUCES GLARE — Eliminates eyestrain and employe fatigue.



RETARDS SUN HEAT—Keeps workers comfortable on their jobs.



RENDERS SAVINGS—Eliminates shades or painting of glass.



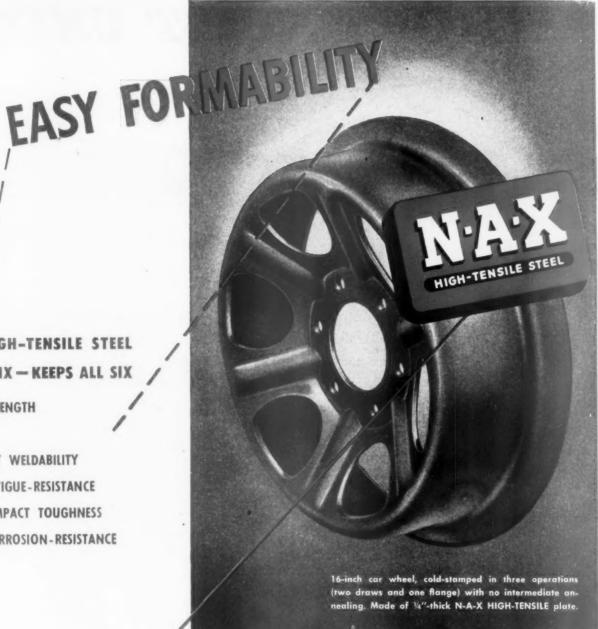
BLUE RIDGE AKLO GLASS

Heat-Absorbing · Glare-Reducing · Figured and Wire Glass



N-A-X/ HIGH-TENSILE STEEL HAS ALL SIX - KEEPS ALL SIX

- HIGH STRENGTH
- **EXCELLENT WELDABILITY**
- HIGH FATIGUE-RESISTANCE
- **GREAT IMPACT TOUGHNESS**
- HIGH CORROSION-RESISTANCE





### WITHOUT LOSS OF OTHER CHARACTERISTICS

Because of an unusual combination of physical properties that are inherent in the steel, N-A-X HIGH-TENSILE will take deep and difficult cold forms without losing other desirable characteristics. It retains structural strength, impact toughness, fatigue-resistance, excellent weldability and high corrosion-resistance during and after production processes. It makes possible lighter, stronger, more durable parts and products, and greater economy in manufacturing. For better steel stampings, specify N-A-X HIGH-TENSILE steel.

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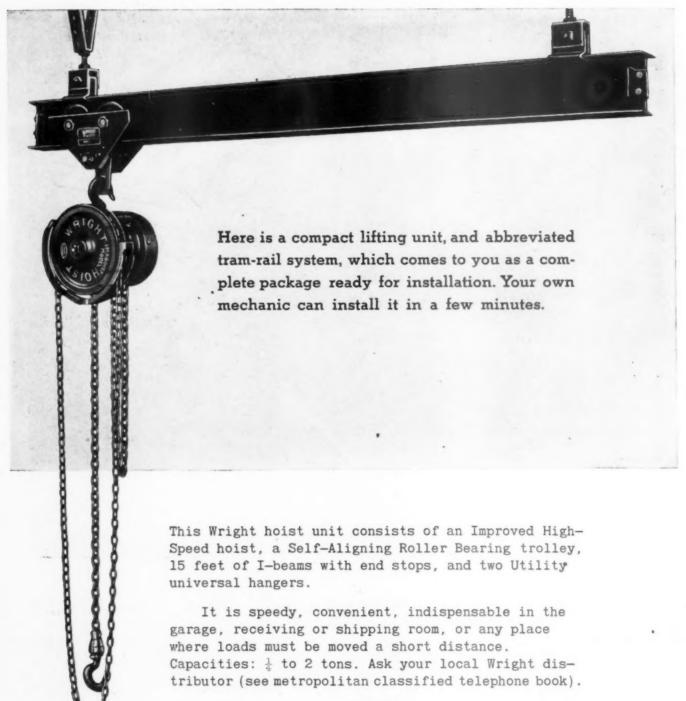
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In Business for Your Safety



Die-cast parts need comparatively little finishing to get them ready for assembly

Little excess metal is needed with Alcoa die castings. Parts run uniform and dimensions are accurate. Details are reproduced faithfully. Relatively little machining and finishing work are required, before parts are ready for assembly.

You save on machining time, when you start with Alcoa die castings. Your costs are correspondingly low.

To obtain fullest benefits with die castings, it's well for the parts designer to discuss his problem with an Alcoa die casting specialist. This co-operative effort usually improves the product and simplifies production. Alcoa engineers are at your service. Aluminum Company of America, 1931 Gulf Bldg., Pittsburgh 19, Pa.



ALCOA ALUMINUM



# Wagner EXPLOSION-PROOF MOTORS

hazardous-location motor drives



on those

You save three ways when you install Wagner type HP Explosion-Proof Motors in hazardous locations:

1. You save on engineering and construction costs because Wagner type HP motors can operate in explosive atmospheres with perfect safety, so there's no need for special vaults to house the motors, and you avoid troublesome remote-drive arrangements for delivering power from outside the hazardous area.

2. You save on maintenance costs because Wagner explosionproof motors are totally-enclosed fan-cooled—the vital parts of the motor are sealed against the entrance of dust, fumes, and moisture which are the cause of most motor maintenance.

3. You save on insurance costs because when you use Wagner explosion-proof motors on those hazardous-location drives your plant has the best in electrical safety. Wagner type HP motors have been approved by the Underwriters' Laboratories for Class I Group D hazardous locations where gasoline, petroleum, naphtha, alcohols, acetone, lacquer solvent vapors, or natural gas are manufactured, used, or handled.

Wagner type HP Explosion-Proof motors are varied electrically to meet a wide variety of application requirements. For a complete description of the type HP, as well as all other types of Wagner motors, ask for Bulletin MU-185, and address your request to Wagner Electric Corporation, 6360 Plymouth Avenue, St. Louis 14, Mo.

### These Construction Features Assure Dependability and Long Life

It's one thing for a motor to be explosion-proof; it's another thing for a motor to give dependable service over many years.

Wagner type HP explosion-proof motors are dependable and long lived — and here are a few of the many reasons why:

#### 1. CAST ALUMINUM ROTORS

One-piece construction of aluminum which does not crystalize or become brittle when subjected to heating during overload—thus the cause of many rotor burnouts is eliminated in Wagner type HP motors.

#### 2. CARTRIDGE BEARINGS

Cartridge construction completely seals and protects the bearings even on removal of the rotor assembly. Bearings are of liberal size.

#### 3. ALLOY-STEEL SHAFT

Shaft is of special alloy steel which increases factor of safety under abnormal load.

#### 4. THOROUGHLY-INSULATED WINDINGS

The stator windings are thoroughly insulated with liberal quantities of the highest-quality materials.

#### 5. STEEL FRAME

The stator frame and feet are fabricated of heavy steel—unbreakable even under severe strains. The frame and feet are welded into one integral unit—no parts to work loose and cause trouble.

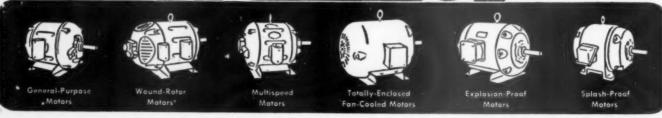
M45-

### Consult Wagner Engineers on all Electric Motor Problems

Electric Motors • Air Brakes • Brake Lining Hydraulic Brakes

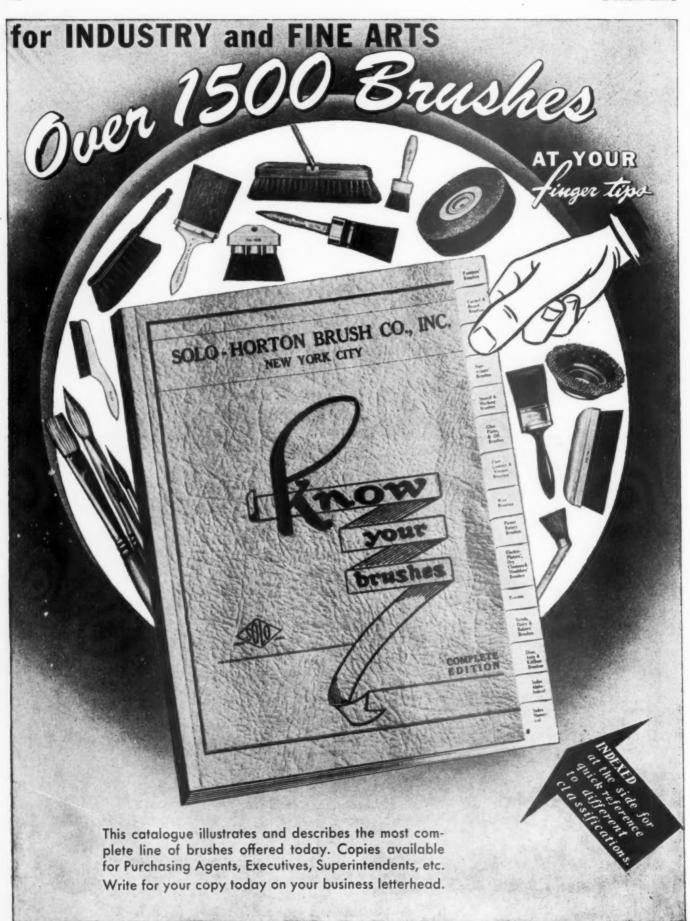


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LEASIDE, ONTARIO—Wagner motor parts are available at 350 Wagner-owned and -contract repair shops.





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High tensile and impact strength, toughness and fatigue resistance—qualities which assure a greater factor of safety—are developed fully by forging metal in closed impression dies. Forging metals in closed impression dies controls, directions and concentrates grain structure to meet the stresses and shocks which occur under actual service conditions. The metal quality obtainable in forgings assures dependable performance. A recheck of every stressed part whether of simple or complex design, against the seven advantages that forgings offer may reveal the possibility of further strengthening a part, or a product, to give longer service life; to lessen weight; to reduce the

cost of machining and finishing; to speed up assembly. Consult a forging engineer connected with your source of supply about the wide range of combinations of quality advantages that are available in forgings and how you can obtain metal quality in the exact degree required for a specific condition. Forging techniques required to

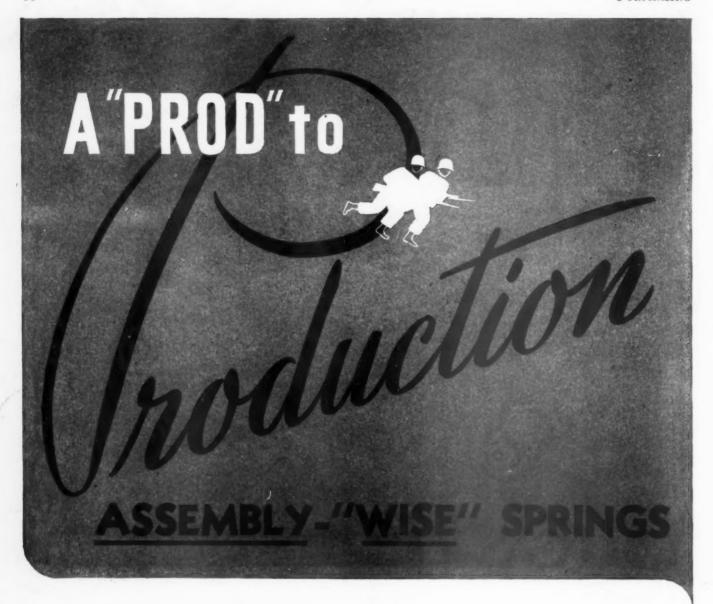
forge so-called "impossible-to-forgedesigns" are now available for the production of peacetime forgings.

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Booklet on "Metal Quality—Hot Warking Improves Properties of Metal."
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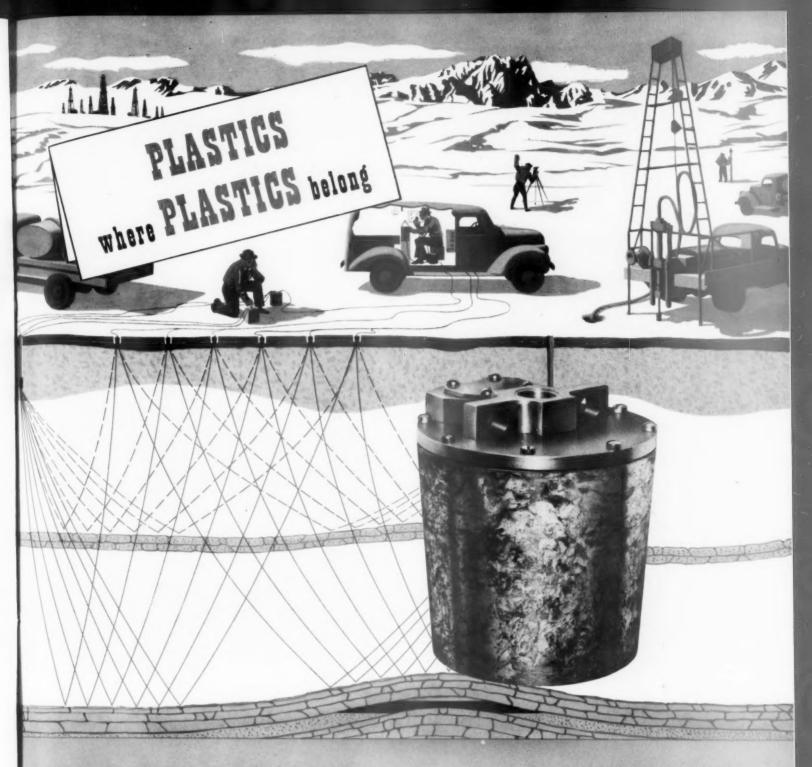
BARNES-made springs fall into perfect step with other parts on your production lines—fitting into place with a minimum of effort or time. That's because—once engineered and set-up for production, rigid controls govern every step in forming and heat-treating to maintain uniformity.

Barnes methods are geared to the great production lines of the nation—with facilities to

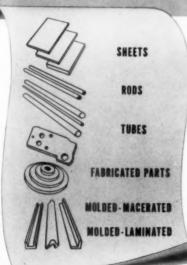
meet continuous or emergency requirements. Here, in one organization, is everything you'll need for spring service: experimental laboratories, engineering skill, tool design, production testing, modern heat-treating, special finishes, and, of course, special machinery to produce the springs to your schedule.

Like the modern service station—it's one stop for spring production—Barnes.

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### Using Corrosion Resistance, Ease of Machining



Anew way to locate oil makes use of waves originating from a detonation of dynamite. Wave reflections are picked up by flower-potlike "ears" strategically buried over the suspect area and seismographically recorded.

The pot or case, containing a sensitive electro-magnetic element, can be made of various materials. With Synthane, however, no special

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Is Synthane better for your job, too? Could be! Why not find out, preferably before you design? We're ready to help you with design, materials or completely fabricated parts.

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SYNTHAME TECHNICAL PLASTICS . BESIGN . MATERIALS . FABRICATION



# MAYBE IT'S TIME TO RECONVERT THINKING, TOU

By the time you read this, it's likely reconversion will be complete or nearly complete. *Plant* reconversion.

But before many a new product is born or an old product reborn, there will have to be a reconversion of thinking.

Some prewar notions about plastics and their limitations will have to be shelved, if they have not already been. Why? Because, even in the unspectacular technical plastics which we make, there have been important changes in resins and fillers. Low-loss and impact materials have been improved. Postforming of so-called thermosetting laminates is no longer a laboratory curiosity.

The old and erroneous habit of regarding plastics as ersatz materials has almost died out. Now it's the rule to use plastics where they rightfully belong, or not use them at all. As if to prove the point, there were so many legitimate uses for plastics during the war, plastics couldn't be

spared for service as substitutes.

CITY.

Reconvert your thinking about plastics? Yes! By all means go over every single part of your product or equipment to see where the advantages of plastics can be properly used to *your* advantage.

If plastics offer all the properties you want, or more than you want, at a more *economical* cost—considering labor, material, ease of manufacture, length of life, sales appeal, replacement expense, customer satisfaction—then use plastics.

Should our own type of plastics—Synthane—seem to answer your purpose, let us help you investigate the use, find the right grade of Synthane for the job, and—if you desire—fabricate the material for you.

The complete Synthane catalog is packed with helpful information. Before you forget, tear out the coupon and send for your copy now.

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Synthane without obligation the complete catalog of Synthane technical plastics.

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It's HOW the exclusive Permite Vehicle is combined with the pigment. It's a matter of delicate measuring (for uniformity) and heating (for acid elimination) and timing – all precision controlled. The result is paint scientifically stabilized to give smooth "armored" protection against moisture, heat and cold, smoke and fumes . . . paint that does a better job of locking out corrosion.

Plan now to brighten and protect wartime-neglected surfaces, inside and out, with the paint that's ready to use when you open the can... the more effective and economical Permite way. See your Permite distributor or write for complete information.

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Complete Shipping Roam Supplies.



For rough grinding and snagging; for micro-inch accuracy finishing—on through the entire range of production and tool-room requirements, Simonds\* Borolon and Electrolon Grinding Wheels meet the major needs of all industry. Thousands and thousands of combinations of various types and sizes of grain in as many different structures with Vitrified, Silicate or Resinoid Bond complete a "ready-made" line of abrasive products which permit perfect "fit" for all conditions. Simonds Grinding Wheels; Segments; Mounted Wheels and Points; Grains, Bricks and Sticks, effect production economies; bring new abrasive efficiency when requisitioned for specific jobs on specific materials under specific machine conditions.

For assistance in requisitioning the correct Borolon and Electrolon products consult distributors in all principal cities. Over a half century of Simonds Abrasive Company Grinding Wheel experience is available through them. Specifications are clearly marked on all Simonds grinding wheels. If you would like a marking specification chart, write us.

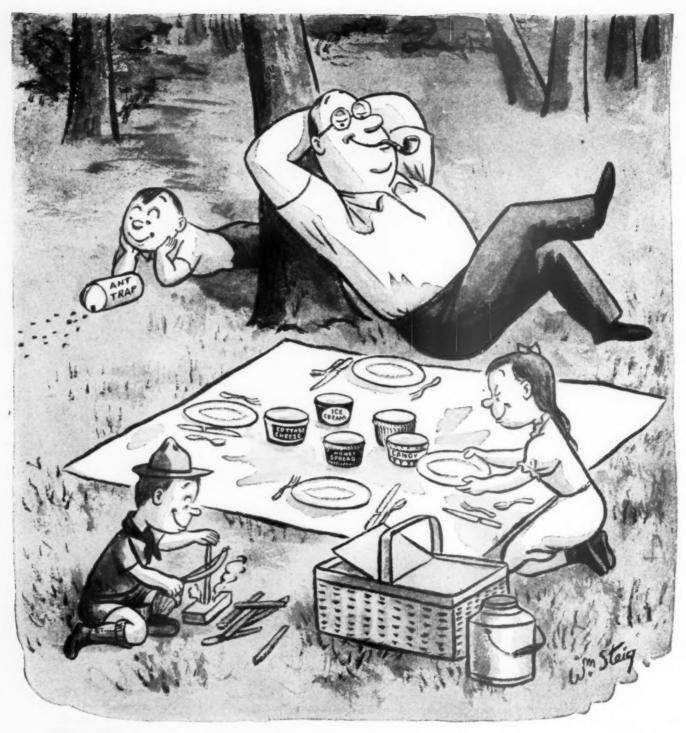
\* Time-honored Borolon and Electrolon Abrasive Products are now distinguished by the name Simonds.

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13 Plants — Sales offices in all principal cities

For the best of service, for the best of paper packages, keep your eye on Continental. Our Paper Division manufactures containers of all kinds—liquid-tight cups, fibre cans and drums—in a variety of types and sizes. Whichever you use, you'll find Continental packages will carry your product safely and surely. And when you see the Continental Triple-C trademark, you know you're getting the best in quality, best in service, too.

# IMPORTANT REASONS-

### Why It Will Pay You to Specify

### **RELIANCE Series "C" MOTORS**

- Protecting enclosures keep out dirt, chips, oil, excess moisture.
- 2. Steel stators for strength.
- Thirteen-step winding treatment, for maximum stator protection.
- Pressure cast aluminum rotors provide trouble-free windings.
- 5. Heavy shafts, liberally designed for added strength.
- Precision bearing mount affords real protection to bearings and windings.
- Optional lead outlet arrangement permits machine mounting with elimination of conduit box.
- Flange and face type brackets offer alternative methods of machine application.

Write today for Bulletin C-118 which gives more complete details on these 8 advantages and offers many additional reasons why it will pay you to specify Reliance Series C Motors.

### RELIANCE ELECTRIC & ENGINEERING CO.

1056 Ivanhoe Road

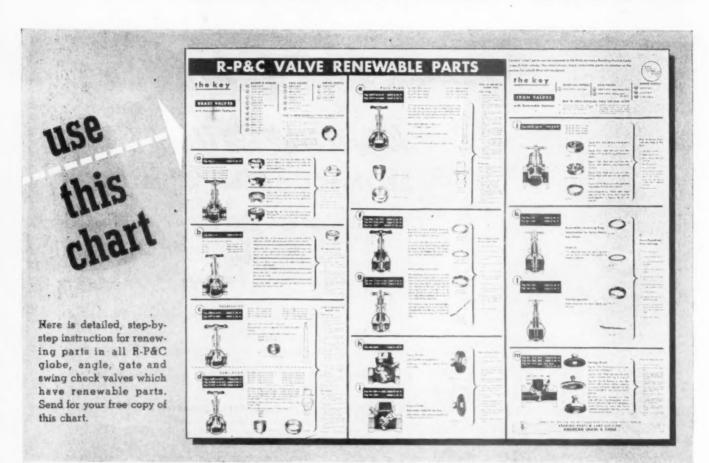


Cleveland 10, Ohio

Birmingham e Boston e Buffalo e Chicago e Cincinnati e Denver e Detroit
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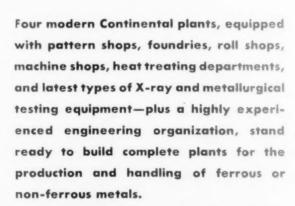
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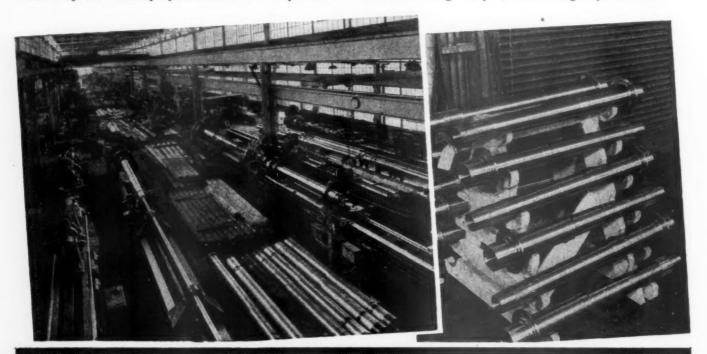
### National Forge Machine Shops Have Greatly Expanded Facilities For High Precision

Every other quality in steel forgings should be matched by accuracy and finish in the final finish machining if that forging is to give longevity in service which is so much desired. Adherence to close tolerances to provide proper fitting and fine smooth surfaces to wear well in the bearings and avoid surface ruptures are highly essential. National Forge has built up a reputation for just that kind of machining. Are you getting that kind of superfinish on the forgings you buy?

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The G-E trade mark on fluorescent lighting equipment signifies the best that engineering skill and quality manufacture can produce. And remember, there is a G-E component for every lighting requirement. The next time you have a lighting problem, call in your local G-E representative. Our complete facilities are at your service.

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# Purchasing Previews



A Washington Report . . .

for Purchasing Agents

APRIL 1, 1946

PRICE CONTROL ACT CHANGES LIKELY . . .

Potpourri of opinion on continuance of price control runs the wide gamut of those who advocate abolition of OPA to those who would continue the controls undiminished.

OPA pricing techniques have produced some strange market phenomena—over-finished textiles, diversion of fabrics into luxury lines, temporary freezes in supply anticipating specific price increases, necessity for open pricing while fixed prices are established etc.

ing while fixed prices are established, etc.

Current thinking is that OPA should adopt an extremely elastic approach to pricing, aimed at encouraging output of low-cost items. This would bring the low-cost items to market at a substantially higher price percentage-wise than their pre-war level, but would result in considerable savings to the consumer in comparison with prices of substitute items being marketed currently.

Price Control Act appears certain to be continued through June 30, 1947, with the National Association of Manufacturers likely to gain some concessions in the way of alterations in the language of the Act.

OPA may have some of its top feathers trimmed, but not its wings clipped.

POSTWAR EMPHASIS ON QUALITY . . .

An important point brought out at Congressional hearings on extension of price control was that consumers are balking at purchase of shoddy merchandise. They want a quick return to pre-war standards, and are disinclined to accept the excuse of material shortage.

Items manufactured during the period when the then WPB made spot material allocations, and which were of poor construction and design, have been marked down to as little as one-third of their original selling price. This does not constitute much of a problem, as there is very little of such merchandise laying around.

On the other hand, it does indicate that consumers will demand standard, high quality merchandise, creating further problems for purchasing agents, who are still faced with scarcities reminiscent of the war period.

A high level of purchasing power sustains the demand for quality merchandise.

CED REPORT RECOMMENDS PROFIT ADJUSTMENT . .

Study sponsored by the Committee for Economic Development takes a liberal view of wage increase grants, and anticipates that the increase in industrial productivity during the next three years will leave considerable room for higher wages.

At the same time, the CED report recommends: Rising wage rates and fixed prices should not be allowed to squeeze prospective profit margins below the levels necessary to stimulate production and be fair to risk-takers. Whenever such a squeeze develops, it should

be remedied by price relief.

The standards used in considering applications for price relief should be made less restrictive, according to the CED recommendations. Under present standards, industry must generally absorb all cost increases without price relief until the average rate of profit on net worth before taxes is forced below its 1936-39 level. The experience of 1936-39, a sub-normal period, is neither stimulating nor fair to enterprise, CED says, but procedures can, however, be modified so as to help the expansion of peacetime production and contribute to general fairness. Some of these modifications are only further steps on the path of revision along which OPA has been moving for several months.

The task of price control in the next 18 months will be made more difficult by the wage increases which are in prospect, in the opinion of CED. The increase in productivity that is normal in peacetime was retarded during the war so far as civilian production is concerned. If there is real labor-management cooperation, it was stated, the next three years may see a very rapid rise in productivity.

On the question of wage increases, CED reported that the operation of the economy at close-to-capacity levels, with consequent reduction of overhead per unit, and the reduction of business taxes, may provide further room for increases of real wages. If these possibilities are fully realized, if rapidly increasing productivity, lower business taxes, and-close-to-capacity operations are achieved, it should be possible for real wage rates to rise step by step to a level by 1948 one-fourth to two-fifths above 1939. The rise will, under these circumstances, not only be made possible, but it will also be necessary, according to CED, to provide adequate markets for postwar output.

### PURCHASING SHOE ON OTHER FOOT . .

During the war, Government war agencies had top priority on whatever they needed. If it was to be purchased at all,

they were able to get it.

Now, with the Government on a par with all other purchasers, the shoe is on the other foot, and Government purchasing agents are having difficulties. More so than other PA's—since in addition to scarcities, they are faced with red tape.

Army procurement officials report that they are on a day-to-day basis on cotton goods. They do not like it.

### SURPLUS OFFICE MACHINES A POOR BET . .

Government agencies are beginning to declare office machines surplus in considerable number, but after the priority claimants pick over the bargains, there is little

left that might attract the industrial buyer.

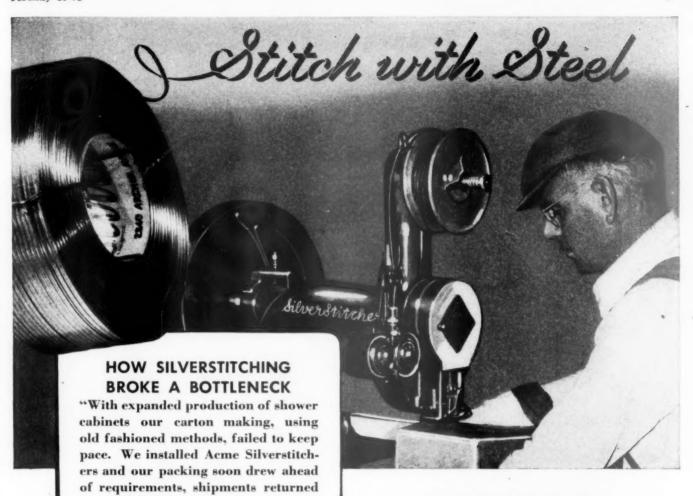
Federal Government, having a top priority, has been taking the best surplus machines—so much so that the machines remaining have been in such generally poor condition that State and municipal government have turned their noses up at them.

### YOU TOO CAN BUY A PLANT .

Difficulties in obtaining materials and components project the advantage of integrated over non-integrated industrial operations.

A trend which has been reported concerns the offerings and sales of Southern textile mills at inflated prices to clothing and apparel manufacturers, who have been induced to buy as a means of assuring themselves of continued sup-

Southern legislators fear that when the supply situation normalizes, the apparel producers will junk the mills rather than continue to operate.



### **KEEPS PACE WITH PRODUCTION**

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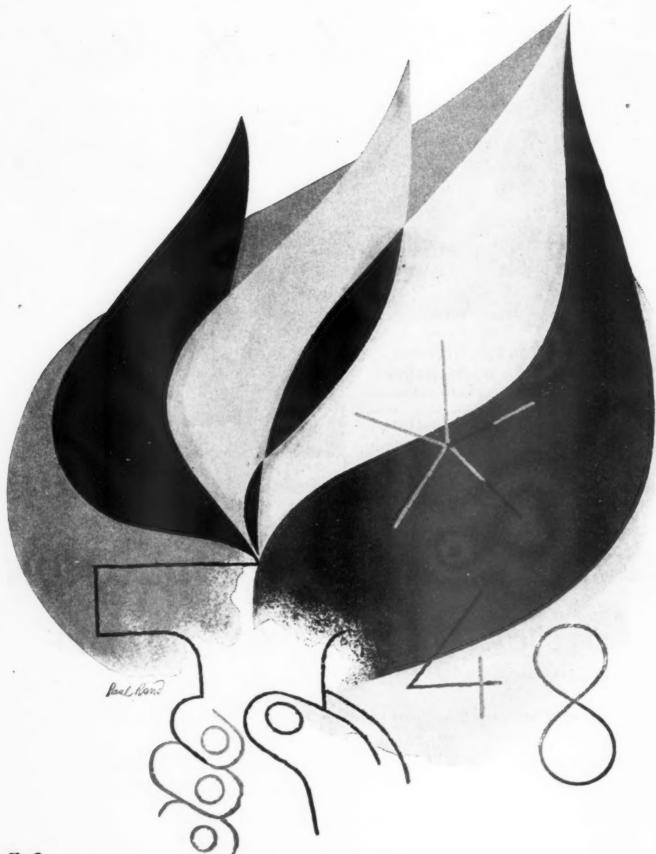
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SAVE WASTE PAPER

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Perhaps you have an unusual job that needs diamond wheels.
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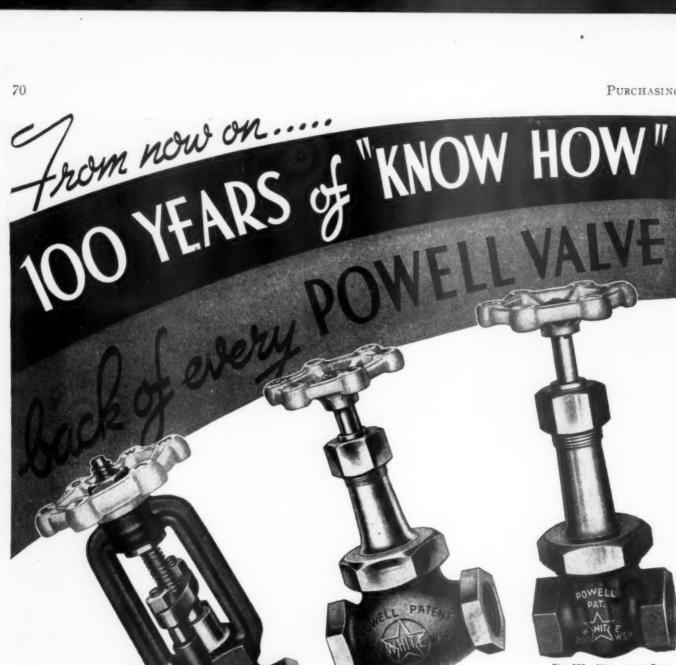


Fig. 386-200 - pound Bronze "White Star" Gate Valve, with screwed ends, outside screw rising stem, screwed-on yoke and bonnet, renewable, wear-resisting "Powellium" seat resisting "Powellium" seat rings and taper wedge solid disc.

Fig. 1708-200-pound Bronze "White Star" Globe Valve, with screwed ends, union bonnet, renewable seat and regrindable, renewable 'Powellium" semi-cone plug type disc.

Fig. 375-200 - pound Bronze "White Star" Gate Valve with screwed ends, inside screw rising stem, union bonnet and renewable, wear-resisting "Powellium" disc.

A century ago Powell started to pioneer in making valves for industry. At the close of the Civil War, Powell patented the famous "Bronze 'White Star' Regrinding Globe Valve", and through the years Powell Engineering has developed a most complete line of Bronze Valves. Today Powell can supply the correct valves for every kind of service in which bronze valves are applicable. A few examples are shown here.

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Fig. 560-200-pound Bronze Regrinding Hori-zontal Swing Check Valve. Screwed ends, zontal Swing Check Valve. Screwed ends, screwed-on cap and regrindable, renewable bronze disc.

# Don't leave it to chance



IN RACING—the pari mutuel odds against the bettor are 10 per cent and "breckage". A thousand men taking \$100 each, betting on each of seven races, and betting all of their money, will carry away only \$47,831...a loss of \$52,169 to the 10 per cent take of the pari mutuels alone.

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Workers have the odds in their favor when they wear Hy-Test Safety Shoes. For these are the sturdy, smooth-fitting shoes that put the Indian sign on those toe-injuring accidents which always lurk just around the corner. Hy-Test's Anchor-Flange Steel Box Toe has its anchoring edge

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it is to have Hy-Test Safety Shoes available for your workers, just drop us a line. No obligation.

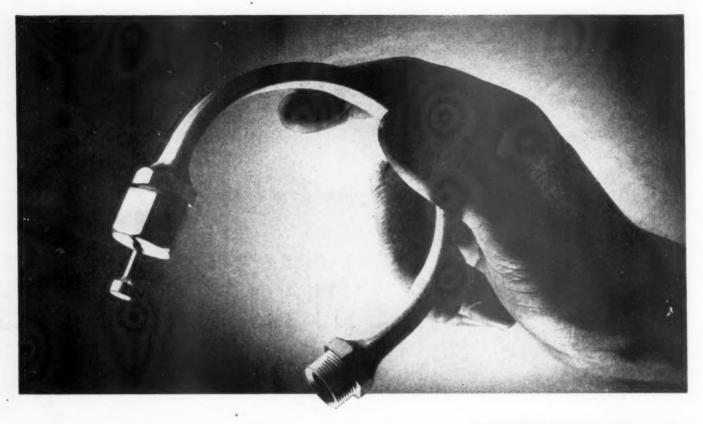


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• Right, professor! . . . from the standpoint of abstract science. But oh, the care required—the years of experience necessary—to make that tube right! The bourdon tube is the heart of the instrument. If it lacks required resiliency it will take a "permanent set"—fail to return to its original form when pressure ceases.

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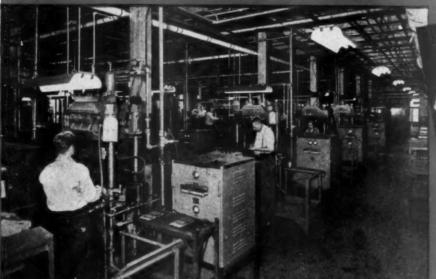
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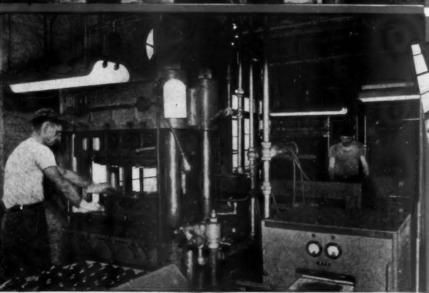


One aisle in the plastics molding division at General Industries Company, showing complete Heatronic equipment. Our engineers have the "knowhow" to make full use of it.





"Before and after" views of the 2-cavity molding of a plastics agitator for a washing machine. High frequency heating permits better production of such large and complex parts.





These electric iron handles are made in 4-cavity molds. The illustrations show placing the pre-form and unloading the finely-finished part.

### to our PLASTICS MOLDING team!

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All around improvement of physical properties

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MOLDED PLASTICS DIVISION



THE GENERAL INDUSTRIES CO.

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And it's a pretty safe bet that they are one of your big sales incentives . . . of course, you also buy them for their inherent strength, economy, take-home value and shipping convenience.

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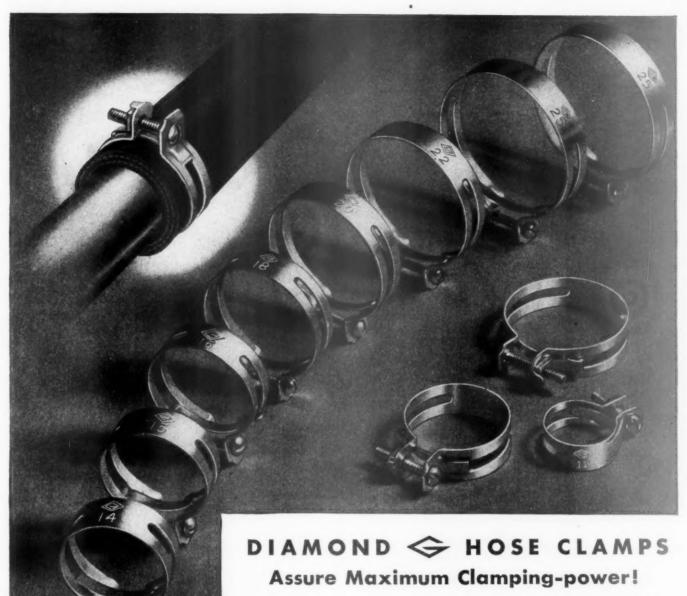
> set-up box manufacturer. Ask him for the latest survey (Dept. 36) "Toys, Games and Novelties Industries".

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PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

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#### PRODUCTION BEGINS WITH PURCHASING

R. Kaiser and Mr. Frazer last month loosed a blast against the steel industry, described themselves as "fighting mad", and demanded that the government restore steel allocations forthwith. The reason for their temper and oratory was that they had been unable to secure enough steel to make good on their much publicized production plans. According to their statement, production is scheduled to start May 1st, and they have enough steel in sight to build 40,000 cars as against orders for twelve times that number. This they characterize as "unfair" to 30,000 stockholders, 4,000 distributors, and a combined investment of some 15 million dollars. Incidentally they announced plans for taking over a complete sheet steel mill in Chicago from DPC.

Their failure to procure this material essential to their program is said to be in spite of two "very comprehensive searches of the whole steel industry"—first by their purchasing department, and then by personal efforts on the part of the principals. It might be stated parenthetically that other users of steel, customers of long standing, are also finding it difficult to get supplies and are forced to accept long delivery promises. Concessions to Kaiser-Frazer would presumably be at the expense of their requirements.

Accepting all this at face value, it would appear that the eminent industrialists are learning two important lessons about purchasing:

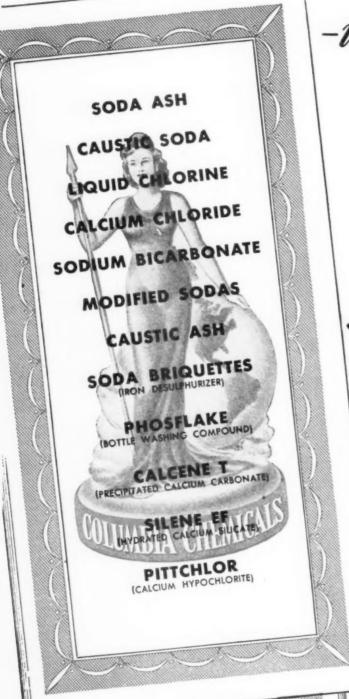
- 1. That production begins with procurement.
- 2. That buying involves more than mere purchasing power.

Successful procurement programs are not built overnight, but are the result of carefully developed relationships extending over long periods of time. As newcomers in the automotive field, Mr. Kaiser and Mr. Frazer can not be blamed for their lack of standing as old customers. On the side of their business relations with the steel industry, their course has not been particularly well charted, and their status as potential competitors doesn't help them get special consideration.

Part of their present troubles, which are by no means unique, is due to the fact that human relations still play an important part in purchasing, and that some less publicized purchasing agents have been doing a pretty good job in consolidating their position with suppliers.

Stuart F. Nemit

### Specify COLUMBIA



-it's Good Insurance



Columbia products meet exacting requirements . . . plants are favorably located . . . distribution facilities are organized for superior service. Equally important—Columbia policies contribute to enduring business relationships.

That's why it's good insurance for your business to specify "Columbia" when ordering alkalies and related chemical products.

APR



PITTSBURGH PLATE GLASS COMPANY . COLUMBIA CHEMICAL DIVISION

FIFTH AVENUE AT BELLEFIELD, PITTSBURGH 13, PA. \* Chicago \* Boston \* St. Louis \* Pittsburgh New York \* Cincinnati \* Cleveland \* Philadelphia \* Minneapolis \* Charlotte \* San Francisco



A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers



Perhaps you are one of those who have recently contributed to a survey to determine Who Buys Electrical Controls. And perhaps you didn't know how this information was distorted to become just another chapter in the seemingly endless series of efforts to discredit and disparage

the purchasing agent. Turn to page 92 for a keen analysis of survey methods and how they can be made to "prove" almost any preconceived idea, and how they can backfire on their sponsors under scientific interpretation. You will be interested, too, in learning that the Saturday Evening Post considers purchasing agents twice as important as any other factor in industrial buying influence. And you will find expert purchasing testimony on how this class of material is really bought.

Have you a Purchase Engineer in your organization? Ned Cady's article on page 112, based on an investigation of such engineers and their functions in a dozen leading companies, tells how they fit into the purchasing program, how they differ from plant engineers, and gives ten specific ways in which they can help the purchasing agent do a better job.

Automobile and Truck Tires made with rayon cord are just now becoming available for general use. But to the few big fleet and bus operators who started using them before the war, the records of outstanding service in rugged military usage came as no surprise. On page 88 Forrest

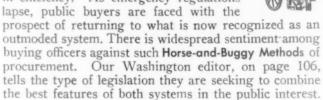
Waldo gives facts and figures showing increased mileage, lower maintenance costs, and substantial purchase economies made possible through the development of this new type product.

This month's Guest Editorial, on page 85, presents the purchasing philosophy of a man with successful buying experience in a variety of fields and several different types of companies, from coast to coast. He has found that the basic principles of purchasing are equally adaptable to all conditions, proving that buying is essentially a profession, not a job.

The most important factor in developing a purchasing policy and program is the economic climate in which

business is done. Today's business disturbances and problems are the culmination of long-term trends that were temporarily halted by the war emergency, and the purchasing agent must shape his program to recognize these trends and to direct them into proper channels. The Buyer Looks at Business examines the situation from the standpoint of prices, competition and profits. Turn to page 102.

The traditional and mandatory policy of governmental buying, involving the call for competitive bids on all orders, was streamlined in wartime to permit the use of negotiated contracts, with great gains in efficiency. As emergency regulations lapse, public buyers are faced with the



Practical Methods of operation described in this issue include the handling of bar stock inventories (page 86) and a complete purchase system (page 115). Pertinent court decisions affecting Purchase Law are reported on page 131. Somewhat more technical is the discussion of Quality Control, appearing on page 122.

Do you fear the growth of Cartels? The article on page 125 will help you to understand them and their domestic and world trade implications. Are you having trouble in getting Coal-Tar Creosote? The article on page 97 tells what alternative products are available and how they compare in performance.

Don't overlook these monthly departmental features compiled especially for purchasing men—the Washington Letter on page 65, with its timely and authoritative preview of official trends on matters affecting industry, as gathered by our Washington office; the listing of Know-How Information, that is yours for the asking, appearing on page 10; and the illustrated summary of New Products and Ideas that are now available for the industrial buyer (page 136), providing a quick and convenient means of keeping up to date on recent developments.



## Ryerson Tubing Stocks Now Large and Complete!

#### Quick Service Assured From 11 Ryerson Plants

For many years we have been building up our personnel and facilities in order to improve our service on tubular products.

Now eleven of the nation's largest and most complete tubing stocks are carried at Ryerson Plants—mechanical tubing, boiler tubes, stainless and structural tubing in all generally used sizes and lengths.

Ryerson tubing meets the most exacting requirements of analysis, size and finish. Quality control covers every manufacturing step from billet to finished tube. Mill inspections are double-checked by two Ryerson inspections, one when the tubing is received in our stocks, the other before shipment is made.

Specialized equipment for handling, cut-

ting and shipment assures quick service. Mill shipments also handled promptly. Whatever your requirement or problem, call on the tubing specialist at your nearby Ryerson Plant.

JOSEPH T. RYERSON & SON, INC., Steel-Service Plants at: Chicago, Milwaukee, St. Louis, Detroit, Cleveland, Cincinnati, Buffalo, Philadelphia, Pittsburgh, Boston and New York.

Principal Products: Carbon and Alloy Steel •

Allegheny Stainless - Bars • Plates • Sheets •

Structurals • Tubing • Inland 4-Way Floor Plate •

Reinforcing Bars • Bolts • Rivets • Metal Working

Machinery and Tools, etc. • Write for Stock List

### RYERSON STEEL

### RECONVERTING THE PURCHASING AGENT

The successful buyer of 1946 must live up to a bigger definition of purchasing, but the fundamentals of good buying are equal to every problem of procurement

#### By ROBERT C. KELLEY

Director of Purchases Dresser Industries, Inc. Cleveland

W ITH shortage of material making the headlines as one of the bottlenecks to reconversion along with labor problems, the spotlight on management today is focused on the Purchasing Department.

Higher labor and material costs bumping against ceiling prices must be offset by increased efficiency to preserve profit margins. Labor saving machinery and incentives to increase output per man hour may be the answers for labor costs. What are the answers for material costs?

The man of the street thinks of a Buyer or a Purchasing Agent as one skilled in the art of trading. The Buyer is pictured sitting across the desk from the Seller engaged in a haggling match. Even if industry were not in a period of high demand and rising prices, this technique would be passé. Standardization of business practices, crystallization of sales and marketing policies, and wider publication of prices and business information have long since obsoleted such procedure.

This has forced successful Purchasing Agent to explore sources, price structures, marketing costs, investigate "buy or make" possibilities, develop new sources, and explore substitute materials. And a trained Purchasing Agent can do this for one industry as well as another, in fact sometimes a fresh viewpoint develops some angle which may have been overlooked.

Removal of priorities has made purchasing more difficult than dur-

Bob Kelley's personal record in purchasing is eloquent testimony in support of his contention that basic skill and experience in procurement is equally applicable to any field. His first assignment of this sort was as supply officer at Camp Meade, Md., during the first World War. Prior to World War II, he was General Purchasing Agent of the Converse Rubber Company and Hodgman Rubber Company of Malden and Farmingham, Mass. In 1941 he was called upon to organize and direct the purchasing department of Basic Magnesium, Inc., Las Vegas, Nevada, and two years later became Director of Purchases for the Food Machinery Corp., Los Angeles, in charge of procurement for the Navy's amphibian tank program. In October, 1944, he joined Dresser Industries, Inc., as Director of Purchases, coordinating the purchasing activities of the 14 companies and 23 plants controlled by this organization. Thus, within a period of five years, his purchasing know-how was successfully applied to four widely diversified types of operations and differing products, literally coast-to-coast in their scope. Mr. Kelley has been an active member of four different Purchasing Agents' Associations during the course of the successive stages in this "Purchaser's Progress" — New England, Los Angeles, Northwestern Pennsylvania, and Progress" Cleveland, where he is now affiliated. He is a past president of the New England Association, and has served as National Director, Chairman of the

N.A.P.A. Textile Committee for 11 years, and member of the national Business

Survey and Educational Committees. He has conducted classes in purchasing at Northeastern University and Boston University College of Commerce, and

has appeared as guest lecturer on purchasing at the Massachusetts Institute

of Technology.

(Continued on page 350)



# STEPS TO EFFICIENCY IN HANDLING BAR STOCK INVENTORIES

Purchasing policies and methods play a major role in determining efficiency of stores service and records; planned coordination enables both departments to do a better job

#### By BENJAMIN MELNITSKY

THE spirit of cooperation between purchasing departments and stores and receiving departments results in more than mere interdepartmental good feeling. Such cooperation has a practical corollary in greater efficiency, lower costs, and the satisfaction of knowing that things are well done. Little would be gained if this article attempted to belabor the great importance of such cooperation; instead, the purpose will be to present concrete means whereby the purchasing department can, with but a minimum of effort, help to reduce errors and delays in both receiving and stores departments.

Many of the proposed means seem like small, picayune matters when they are considered individually. Yet these small matters, if neglected, magnify and accumulate till they become major problems when material is to be received or stored.

This discussion is restricted to matters that pertain to bar stock, tubing, and other prefabricated metal forms. Receiving and storing bar stock are traditionally beset with headaches and problems which eventually become the sole possession of the purchasing department. Bar stock may be weighed incorrectly, sizes measured improperly, materi-

als identified inaccurately. In short, a multitude of things can and do happen when bar stock is introduced upon the scene.

Purchasing can do much to cut down the errors associated with the handling of bar stock. Some of the more important measures by which purchasing can help to alleviate this situation are listed below.

#### Identifying Material

1. To facilitate the identification of bar stock in the receiving room, all purchase orders should specify that the vendor paint or stamp the bars so that when the stock is received, the receiving department will recognize and know the exact specification number of each bar. Unless a bar has an identifying number painted on the end, or has the specification number stenciled on the bar. or bears a tag with the specification number, there is no possible way for the receiving department to know with absolute certainty the nature of the material being received. In cases where bar stock is identified by paint on the ends of bars, the purchase order should specify the paints that are to be used to identify each item on the order, and the color code should be consistently observed.

2.: To prevent confusion both at the vendor's shipping room and the plant's receiving room, individual purchase orders should never list one size of stock for two or more different types of bar stock. If a single purchase order calls for 1" dia. 4145 H.R.H.T., 1" dia. 1020 H.R., and 1" dia. 8620 H.R., the chances are very strong that when all three types of material are received against a single order number, the 8620 will be confused with 1020 or 4145, and this confusion will persist with unfortunate results when the material is placed in stock and issued for use. The dangers of having this happen are so great that the extra time spent in writing three different purchase orders for the three different types of material will be repaid many times over in the knowledge that the materials will be properly identified and will not be mixed

3.To prevent mistakes at both the vendor's and the buyer's plant, closely related steels should be listed on separate purchase orders. To list 4145 Hot Rolled Annealed and 4145 Hot Rolled Heat Treated on the same purchase order is to invite trouble. Similarly, listing round, square, hex, octagon, etc., of the same type and size of materials on the same purchase order is dangerous and may lead to confusion in the receiving room even though it might seem that such different shapes could readily be identified by visual inspection.

#### Standard Nomenclature

4. Standard designations for types and sizes of bar stock should be followed. The practice of calling bar stock by different names in several different departments only leads to errors. A few examples should suffice to illustrate this point

fice to illustrate this point.

a. Tubing should be specified by outside diameter and inside diameter, or by outside diameter and wall thickness. The purchase order should agree with the nomencluture used on bar stock records. If O. D. and I. D. are standard on records, purchase orders should so designate all tubing. If, on the other hand, wall thickness is used instead of I. D., the purchase order should do the same. Introducing the term I. P. S. (Iron Pipe Size) as a designation for tubing is not very wise, for experience has shown that, more often than not, the receiving people have no idea of what I. P. S. stands

b. Square stock should be designated either by such a size as 2" square, or 2" x 2". Using both systems indiscriminately serves no other purpose than to increase confusion. On flat stock, sizes should



Every item of bar stock should be clearly identified and marked for accuracy in purchasing, stores and use

be designated by the smallest dimension first, i. e., ½" x ¾" and not ¾" x ½". Lack of consistency in this matter will often mean that there will be a separate record for ½" x ¾" flat and another record for ¾" x ½". Under these circumstances, no one will know with accuracy whether the material is available in stock or in what quantity. Duplication of orders and stocks may follow.

c. When listing specification numbers for metals on the purchase order, the specification number that is used throughout the shop and on all records should be used. Thus, if the A. I. S. I. number A3141 is used to designate a nickel-chromium steel with a carbon range of 0.38-0.43, the S. A. E. number X3140 should not be listed on the purchase order even though both numbers designate the same metal. If records for bar stock are not consistent in this matter, steps should be taken to achieve a uniform designation throughout the shop. The latest A. I. S. I. numbers are preferred for steels because they embody all the S. A. E. numbers plus others not covered by S. A. E. specifications.

d. When ordering non-ferrous metals, care should be exercised to see that correct specification numbers are used. Listing "brass rod" on the purchase order means nothing whatever to either the receiving department or the stores department. Receiving will not be able to receive it correctly, nor will stores be able to store it properly. But if the purchase order specifies "Yellow brass, Alloy #170", little difficulty will be encountered in receiving and stores, and there will be fewer phone calls to purchasing.

e. When steel is purchased in a heat-treated condition, the purchase order should list the desired hardness ranges in either Brinell, Vickers, Rockwell or Shore hardness numbers (and the particular scale used should be mentioned) depending on the type of testing machines available in the plant. Listing the hardness range one way and then another way on the next order is confusing.

f. Where gauge sizes are used for plates, pipes, and tubes, one standard gauge should be used on all records and indicated accordingly on all purchase orders.

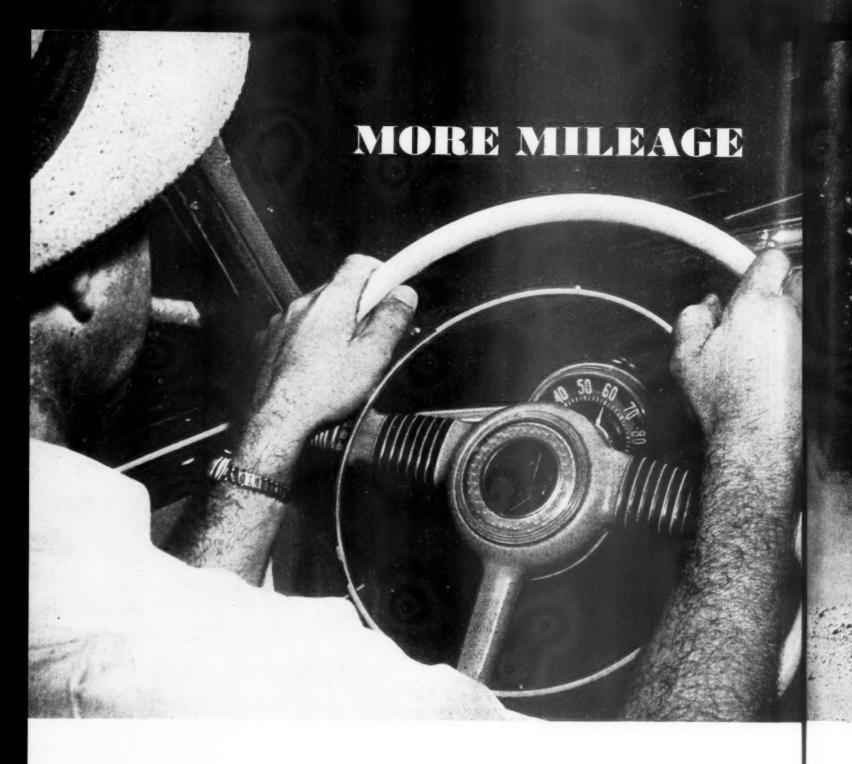
g. Drill rod should be ordered consistently either by decimal sizes, fractional sizes, or gauge. Using all three systems interchangeably causes errors in receiving and/or in stores.

h. Avoid metric and other unusual systems of measurement. If materials must be purchased under such measurements, the numbers should be converted to fractions or decimals on the purchase order to conform with standard commercial usage.

i. Where metal is identified by a brand name as well as by a specification number, both name and number should be indicated on the purchase order.

#### Good Stores Practice

5. Minimize the number of metals carried in stock to whatever practical extent is possible. Quite frequently, a storeroom may be overloaded with an excessively large number of metal types, most of them in only a few sizes and in relatively small quantities. The accumulation of hundreds of different types of metal adds to the burden of carrying and keeping track of stock, and leads to confusion, waste, and error. Whenever possible, purchasing policies should be such as to keep the number of types down to the absolute minimum. This was to a great extent impossible during the war, when availability of materials dictated the purchase, and even now to some extent alternate steels must be purchased to meet pressing demands. However, care on the part of purchasing can go far toward keeping



#### By FORREST WALDO

UNTIL September of 1943, many tire users had made their tire selections under the assumption that it was the quality of the rubber, and perhaps the configuration of the trend design, that determined tire serviceability. In September, 1943, a startling item of testimony presented before the Senate (Truman) Committee Investigating the National Defense Program, abruptly brought people to a realization of the importance of the textile cord in the tire. This revelation was that virtually every inter-city bus company had been using rayon cord tires for the previous three to five

years. Fleets which purchased tire use under mileage contracts almost invariably were given rayon cord tires, and just as invariably reported significant increases in mileage and reductions in blowout failures.

To those outside the trade, the question naturally arises, if rayon cord made such vast improvements in tire performance, why was this fact not "shouted from the housetops." To this there are several answers. One is that publicity for rayon would have constituted unfavorable publicity for the types of cords previously used, and no one was anxious to be the first to make public issue of it. Second, there was not enough rayon manufactur-

ing capacity to meet the heavy demands that would have poured back from an aggressive selling campaign. Third, the war intervened, and military tire requirements absorbed all of the special, hightenacity rayon that expanding factories could produce. Only now has the situation struck a balance, and with it have come the first public announcements that rayon cord tires will soon be available to all, in all sizes, and for all types of service.

By now, too, tire users have awakened to the fact that the textile carcass of a tire is equally as important as the rubber. It has its own functions, in the performance of which it can make or break the rubber. This was dramatically



brought out when it was shown that without rayon, synthetic rubber tires would have been a dismal failure. As it was, they carried us, quite literally, through the war.

#### What Does Tire Cord Do?

The textile body of a tire can be very aptly compared by analogy to the steel skeleton of a skyscraper. The steel structure provides the strength to resist loads imposed on the building, and at the same time supports the brick and masonry facing, which keeps out the wind and weather but carries little of the load. In a tire, the criss-cross lacing of cord fabric provides the high tensile and bursting strength needed to contain the compressed air

and to resist severe outside impacts. It supports the weight of the vehicle and load, and prevents the tire from "growing." By taking the brunt of a tire's burdens, it leaves the rubber in a practically relaxed state, thus insuring good traction, maximum mileage, and long life. Naturally, different kinds of cord will perform these functions with varying degrees of efficiency.

Thus the principal requirement of cord is that it be strong, and particularly that it be strong when heated, as it is in high-speed or heavy-load work. The special high tenacity rayon used in tires is a modified form of the viscose rayon used in dress goods, and it is unbe-

lievably strong. The tensile strength of the rayon filament or thread unit is actually greater than that of structural steel. Its retention of strength at elevated temperatures is high, showing a loss of only 5% at 200° F, whereas ordinary cord loses 23% of its strength at this temperature, which may be reached at speeds of less than 40 mph.

Every test which has been conducted has demonstrated that rayon's most significant contribution to tire life lies in the realm of temperatures. The importance of heat cannot be overstressed—it is the major enemy of tire life. A hot tire is more prone to blow out, and its life is shortened through an excessive rate of rubber treadwear. The



Harry Guzicki at the Detroit plant of United States Rubber Company inspecting rayon woven cord as it runs into the solutioning machine.

rayon cord tire achieves greater mileages and safety in two principal ways: by reducing the running temperature of the tire, and by reducing the damaging effects of such heat build-up as cannot be avoided.

The reasons for this are neither involved nor scientifically mysterious. Rayon, being much stronger than conventional cords, can be made thinner, or in fewer plies, thus requiring less covering rubber and allowing the tire walls to be made thinner. A thinner tire runs cooler because it develops less flexing heat and because it dissipates heat more rapidly. Tests have shown the temperature reduction to

be approximately 20° F at 45 mph. This seemly small difference is responsible for thousands of extra miles of rubber treadwear. And as previously mentioned, the "hot strength" of rayon materially reduces the likelihood of heat blowouts, which are normally the principal cause of tire failure. Bus companies have, in fact, reported that blowouts are almost entirely eliminated with rayon cord tires.

#### How Much Increased Mileage?

Some readers will recall the excitement that was aroused in 1943 when the Truman Committee first revealed the results of mileage tests which had been conducted by the U. S. Army, and which were the basis for the Army's decision to use rayon in all large military tires. These tests, run on Army proving grounds, had shown rayon to have a superiority of 25% in mileage on hot desert roads, and 55% on the rough-road course at 'Camp Normoyle. How these figures would check with experience in normal civilian driving operations was a question difficult to settle as long as fleet owners were obliged to take what tires they could get, with no opportunity to make careful comparisions. However, a few operators were able to make such checks during the war, and in the light of the present prospect of a return to normalcy in tire supply, their experiences should prove valuable to

An Eastern truck fleet, operating as a common carrier in both long distance and local hauling, found that in natural rubber tires, rayon outlasted the old type cord by about 30%, giving approximately 65,000 miles compared to 50,000. These figures were based on a large number of discards, since the fleet keeps about 1,000 tires on the ground at all times. Records on synthetic rubber tires showed a somewhat greater advantage for rayon, with an average increase in mileage of about 40%. These mileages were obtained on wartime synthetics which suffered considerable heat build-up. Recently developed synthetic rubbers are reported to be much improved, and in these it is likely that the relative advantage of ravon will more nearly approximate its performance in natural rubber tires.

Reports from other large users of tires are in reasonably close agreement with the foregoing figures and with the results of the Army tests. The increase in mileage given by rayon tires varies with the type of service involved, but it has been found generally true that the more rigorous the service, the greater is the relative increase in mileage. A grocery distributor, for example, has reported a 25% increase in tire mileage when rayon tires are used in long-haul work, where speeds and temperatures are relatively high. In local stop-start delivery work the rayon tires delivered 10%



more mileage. A bus operator, on the other hand, conducted a limited test which showed an average of 36,600 miles on rayon cord compared with 16,400 on the old cord, an increase of over 100%. That this is exceptional is indicated by the voluminous records of a major inter-city bus system, which showed an average increase of 30%.

#### **Annual Dollar Savings**

Though mileage is probably the best measure of tire performance it is by no means the only important index. The records of the foregoing companies also show significant decreases in the frequency of blowouts. One user conducted an elaborate road test and reported that impact blowouts were cut in half with rayon, with an average mileage-to-failure of 37% more than was delivered by conventional tires. Another company found that their tire failures were reduced by about 45%, due to the greater resistance of rayon to heat and impact breaks.

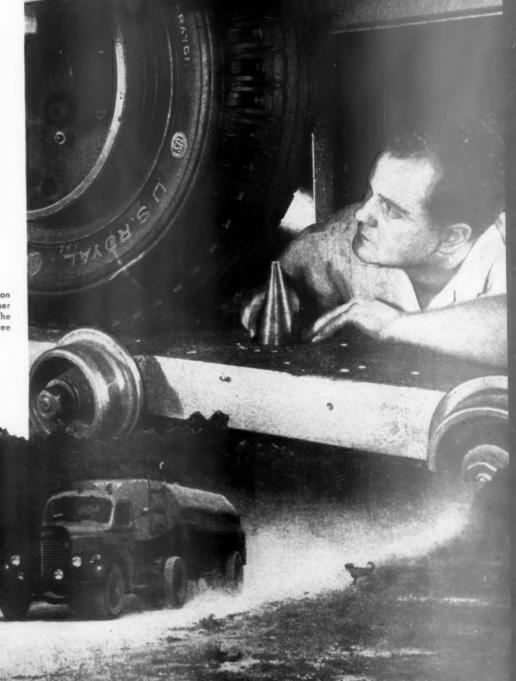
Another factor which, though difficult to measure, figures large in the estimation of fleet superintendents is the reduction in maintenance costs which accompanies the use of rayon tires. It follows naturally from the fact that if mileages are increased and blowouts reduced, road delays, servicing of equipment on the road, and shop maintenance work will be proportionately less.

Examining the results of horizontal rupture test on U. S. Royal truck tire at United States Rubber Company's wheel testing laboratory at Detroit. The pin can be raised or lowered to determine degree

of resistance to rupture.

In terms of savings in the annual tire bill it is evident that each 10% increase in average tire mileage alone means that 10% fewer tires need be purchased. It requires little figuring on the part of any purchaser to arrive at an estimate of the dollar savings that might accrue in a particular instance. In the case of the grocery distributor mentioned above, the tire bill was reduced by about \$1,500 annually. In the case of the truck fleet whose rayon tires delivered 40% more mileage, the saving was more than \$10,000 a year, based on their 1944 expenditures for new tires. Figured in this way, the difference between rayon and the old type cord becomes very much an economic difference, arising directly from the technological distinctions between the two cords.

These experiences, coupled with the outstanding record of rayon tire performance on Army vehicles throughout the war, give proof that the development of high-tenacity rayon has indeed marked a significant improvement in tire construction—one which fully justifies the current enthusiasm of the tire manufacturers in announcing their new lines of rayon cord tires.



NEXT to government (which is in a class all by itself as an addict of questionnaire surveys to collect statistics on all sorts of subjects) and the public opinion polls (which do it as a business, so that the survey is both the means and the end), the magazine industry is probably the outstanding exponent

of this type of research.

There can be no doubt that a great deal of interesting and useful information has been developed by this process, but like most things in life, the method can be either used or abused. Its legitimate use is to secure honest information through a cross section of experience and opinion. The results may be either published or suppressed, as may best suit the purposes of the surveyor; many of the most significant surveys never get beyond the inner circle. But in any case they have served their purpose of providing a truthful guide to the thinking and action of those who got the facts.

#### Use and Abuse

The abuse of the method is to assemble a mass of answers as testimony in seeming "proof" of a predetermined conclusion. These surveys are generally given wide circulation. Actually, they add nothing to anybody's information, and they may be seriously misleading.

It is pitifully easy to warp a survey so as to support almost any desired point. Adroit phrasing of the questions suggests the answers that are wanted. Careful selection of those who are to be approached pretty well determines in advance what general tenor of opinion and response may be expected. And finally, the summaries may be tortured in the process of "interpretation" so as to put into the mouths of the correspondents words and thoughts that are far from their actual intention.

It is likewise easy for the intelligent reader to recognize a survey report as either honest or prejudiced. Even if the mechanics of questions and lists are not revealed in detail, the results themselves usually tell the story. For the biased surveyor always overplays his hand to prove his point. The palette from which he paints is rich in glowing white and deepest black, but has none of the intermediate grays of fact. On a controversial issue, he is not content to win the race; his opponents must be left at the post. Unfortunately for the verisimilitude of his argument, life just isn't like



### WHO BUYS ELECTRICAL

that. Life can be beautiful, as the radio persistently reminds us, but not in any such stark and unrelieved contrast. Even the fellows who ran for the presidency against the late great Champion rated better than 40% of the total on the pre-election surveys.

#### Looking for Information

Two magazine surveys arrived at our desk almost simultaneously a few weeks ago. It happened that both were of unusual interest, for they were both concerned—albeit somewhat incidentally — with the purchasing agent and his position. They were further of unusual interest because they presented diametrically opposed viewpoints on the topic.

One of them had been compiled by the Saturday Evening Post, a journal of considerable distinction and national prestige. It sought to determine the reading habits of "top executives" in industry, and their attention to the advertising carried in a dozen more or less comparable weekly publications. To this end, a representative list of 5,000 such executives had been queried. We were particularly interested in a paragraph outlining the method of selection.

Specifications called for random selection of 5,000 names of executives to be drawn from national lists of companies among twenty-three industries until a balanced cross section was completed, approximately as follows:

500 Presidents

500 Vice Presidents

500 Secretaries and Treasurers

500 General Managers

500 Sales and Advertising Managers

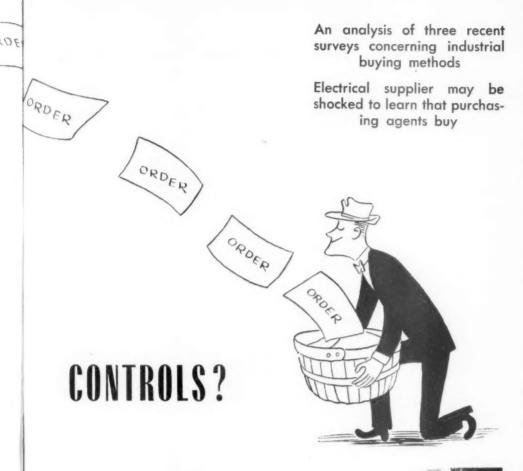
500 Engineering

500 Manufacturing
500 Office Managers

1000 Purchasing Agents
Because of the purchasing agent's importance as a direct factor in buying many industrial products, it was decided to double the mailing to this group.

#### A Contrast in Methods

The results of this investigation were notably favorable to S. E. P., a fact which doubtless impressed many an advertising manager interested in the same type of information. That impression was strengthened by the fact that the preference was indicated as a reasonable rather than an overwhelming margin. It had the ring of truth because it admitted (1) that some top executives actually looked at two or more weeklies, and (2) that some of them even preferred one or more of the other publications. These replies were duly noted.



The other survey was reported by an obscure industrial magazine circulating among manufacturing men. It purported to study industrial purchasing habits - specifically, to determine what classes of executives in industry influence the purchase of circuit breakers, safety switches, motor starters, and other electrical controls. To this end, we are told, visits were made to 163 plants, named in the survey. It is rather curious to note that in an investigation of purchasing practice, only 3% of the executives interviewed were connected with the pur-

chasing department.

As a result of this scholarly research, we are presented with a mass of evidence to the effect that purchasing agents have practically no voice whatever in determining what make of electrical controls is to be purchased. The testimony is unanimous, repeating the old refrain in an ever-swelling crescendo. And to underscore the theme, just in case any reader might still harbor the idea that purchasing agents purchase, the survey emphasizes a similarly unanimous conclusion that the buyer's part in the transaction is to type and sign the orders at the dictation of the production and shop men whom he serves in a routine clerical capacity. He is freely and generously conceded to have this prerogative, and is thereby categorically damned. One may well pause to wonder how such a lowly underling could ever be rated in the other survey among the "top executives" of industry, and indeed be given double weight "because of the purchasing agent's importance as a direct factor in buying." Obviously there is something rotten in the

State of Research.

Here is a dramatic contrast and contradiction, and if either study is to be given any credence this basic issue must be resolved. Why should one survey go to such lengths to disprove a point that the other accepts as so basic and well established that it predicates its whole inquiry upon it as mathematical reasoning is based upon an axiom requiring no proof. We need not resort to weighing the credibility of witnesses. There is ample evidence to be found in the analysis of motive and method.

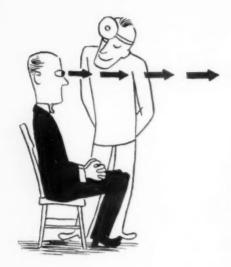
The Saturday Evening Post is seeking to measure opinion and preference, which are proper subjects for individual replies, to be collated in a summary. It recognizes

that the executive positions in ... dustry cover a wide range of particular functions - administrative, financial, managerial, marketing, engineering, production, operational, and purchasing—and that com-pany management is essentially the coordination of these particular functions, which all contribute to the common effort according to specialized responsibilities or phases of the over-all activity. They work together, not apart; far less are they to be set one against the other, either as to rank or function. So in order to get a comprehensive and balanced picture, the inquiry goes to all nine classifications, approximately balanced as to number, and the returns are pooled in a single representative percentage figure.

#### "Proving" a Point

The second survey, on the other hand, is ostensibly concerned with determining a fact of procedure, which is a type of information that has never been successfully answered by vote. It essays to accomplish this on the basis of a very small sample of industry, possibly reflecting its own limited and rather specialized circulation lists, and it studiously avoids the breadth and balance of coverage that characterize the other study. Hanging its argument on the rather specific peg of actual practice in respect to a particular group of purchased items, its conclusions are extended to the controversial issue of functional authority, and the evidence (if the recorded opinions can be dignified by that term) has been loaded against the purchasing agent 97% to 3%. The interpretation given to this data is a reiteration of the ancient and oft-refuted theme that the way to sell is to by-pass the purchasing agent, and the method of arriving at the conclusion is the simple expedient of by-passing the purchasing agent in an inquiry on buying methods. At least the surveyor is consistent, if not highly imaginative, in his approach. But we can only deduce that his so-called conclusion was in fact the premise of his study, and that the answers were adduced in support of it.

According to its sponsors, this survey is a highly confidential document. They can scarcely be blamed for a certain reluctance in exposing it to the light of critical analysis; out as a matter of fact, in their eagerness to put over their particular version of belittling the purchasing agent, it has been kept about as



confidential as an illuminated sign overlooking Times Square. A little more reticence in broadcasting this marketing advice would have been a real service to the field, for the manufacturer of electrical equipment who toys with this theory is likely to get a serious shock.

#### Postscript to a Survey

The most charitable construction that can be placed upon so biased a presentation is that a blind spot exists so far as the buying function is concerned, which is a defect not uncommonly found in the practice of industrial optometry. In any case, it is evident that to get an authentic and well rounded view of purchasing practice, the purchasing agents themselves ought at least to be consulted. So, in the interest of really finding out how electrical controls are bought, PURCHASING decided to compile a supplement or postscript to this survey, addressing the inquiries to the purchasing agents of the same 163 plants that had contributed to the original study. At the time of this writing, more than one-third of them have replied.

In undertaking this project, we are acutely conscious that we place ourselves in a somewhat vulnerable position on the very points of survey technique that are criticized above, but we have tried to be scrupulously fair. We recognize that the sample of industry here queried is so small as to constitute far less than a representative cross section of the field; but as a supplement to the earlier study one feature of its significance lies in the fact that it represents the selfsame plants. We are frank to state that the questionnaire went to a single functional group; but this is the particular group that was

omitted — and misrepresented by omission—in the former report. We admit a certain bias in challenging the conclusions presented in that survey; our convictions on that point are supported by a large body of real factual research on the subject of buying practice, extending over a period of many years, embracing many hundreds of plants and a wide variety of purchased items, and they are evidently shared by such strictly neutral researchers as the Saturday Evening Post.

One of our correspondents, in his reply, gives us a friendly word of caution, warning us not to fall into the error of "going too far in the other direction and claiming too much for the purchasing department." We had already anticipated that cautionary approach by basing our questions on what we have found to be true in respect to purchasing policy and practice generally-namely, that purchasing decisions are arrived at by a cooperative process in which all interested parties are consulted and have a voice; that management demands a procurement program based on competitive and alternative sources of supply; and that the purchasing agent's prerogative and responsibility is to decide on the supplier and the make, from among the several duly approved suppliers and makes, in issuing the order. The routine mechanical writing and signing of the order also comes within his province, but this is not a point at issue.

The questions asked were as folfollows:

1. In the purchase of circuit breakers, safety switches, motor starters and other electrical controls, does the purchasing department determine who among an approved list of suppliers will get the order?

2. Which of the following classes of executives does the purchasing department consult with in determining the make to be purchased?

Manufacturing executives (works managers, superintendents, production managers, factory managers)

Maintenance executives (plant engineers, master mechanics, maintenance superintendents)

Electrical executives (chief electricians, plant electricians, electrical superintendents)

Design executives (chief engineers, design engineers)
3. Remarks.

It developed, as we hoped would be the case, that a large proportion of those replying took advantage of the third item to comment more fully upon the policy and procedure in their respective plants, and to give the proper interpretation to the bare statistical summary of the first two specific queries. Certainly nothing can be more free from bias and suggestion than the invitation to comment freely upon the subject under review. As a highly significant contribution to the study, a number of these comments are quoted below.

#### What This Survey Shows

One of the first things that is noticeable in these returns is that the willful omission of purchasing agents from the earlier survey in an effort to establish the fact that other departments have buying influence, was not only silly and unscientific, but unnecessary as well. Purchasing men, however insistent they may be on the exercise and recognition of their own buying prerogatives, do not try to make this point by denying to all other departments their respective interest and prerogatives in the process of selection, but frankly concede the fact (which is evaded in the strictly one-sided querying of manufacturing executives) that procurement is a cooperative responsibility. From their own viewpoint as buyers, common sense tells them that purchasing can be more effective when the experience and preferences of other qualified officers, who are concerned with the use of these items, are utilized to guide and support their own purchasing judgment.

Every one of the purchasing agents reports that one or more of the other executive groups are consulted and have a voice in determining the types and makes of controls that will best satisfy the company's needs. The answers to the second question show that these groups are a factor in selection to the following extent:

Maintenance 56%
Electrical 40%
Design 38%
Manufacturing 28%

A second important point is that there exists a rather clear distinction between electrical controls that are bought for the company's own use and those that are bought to be incorporated in the company's product or as accessory equipment for resale with the product. In the latter class of purchases, the customer's preference is a determining influence and the design engineer plays a large part in adapting it to product

design.

But in respect to the purchases for company use, the third and highly significant fact developed by this survey is that after the engineers and operating men have indicated the several makes which would be suitable and acceptable, and have given their OK for the inclusion of such makes on the buyer's "ap-proved list", it is the buyer's responsibility and privilege to select the one make and supplier for which and for whom the purchase order is issued. The replies show that this procedure is followed in 83% of the companies surveyed, a very substantial and impressive majority. The remaining 17% includes several companies too small even to maintain a purchasing department. Obviously, in such cases, there is no question of departmental function or authority involved; nevertheless they are included in the totals.

#### No Special Case

So the answer to the question of who is responsible for the purchase of circuit breakers, safety switches, motor starters and other electrical controls is clear. It is the purchasing agent, making his selection and decision from among the makes and suppliers on the approved lists for each specific item, as developed in every well operated purchasing department in cooperation with engineering and manufacturing executives and bearing the stamp of their full approval.

In other words, the purchase of electrical controls is handled in exactly the same way as the purchase of all other items and products reg-

ularly used by industry in which competitive and alternative sources are available. The contention that "our business is different" has long ago been disproved. Except for minor variations in the extent to which various departments are interested in a particular product, the pattern of efficient procurement follows a standard outline, and management has established purchasing departments for the job of making purchase decisions. The survey might just as well have concerned itself with the purchase of hacksaws or lift trucks or box strapping or welding rod, or any of the thousand and one other items that are needed to keep a plant running, and the answer would come out the same. For that is the way purchasing is done.

#### The P. A. and Competition

Whenever a requirement arises that is available from more than one source-and there are few industrial needs that cannot be satisfied by the use of alternative products-the purchasing agent goes to work to find out what these alternatives are so that they may be considered in making a buying decision. Wherever practicable, the requirement is stated in the form of a specification without reference to any one make or supplier. This does not imply any prejudice against the plant man's original suggestion, nor does it imply that the suggested product is not entirely satisfactory. It is good purchasing practice because it is entirely probable that something even better for the purpose may be found or developed, and because the purchasing agent wants his company to have the advantage of making not only a good buy, but the best buy. Furthermore, no plant can afford to tie itself to a single source or make. Continuing shortages and the threat of work stoppages that may cut off any given source at any given time emphasize the importance of this consideration in present markets.

The purchasing agent does not arrogate to himself the authority to make such decision against the good judgment of the men who are to use the products. He gets their approval



and assurance that the proposed alternates are satisfactory and acceptable. Sometimes this requires some selling on his own part, but if the materials or products are sound and suited to the purpose, there can be no real objection to this procedure and it is the method used today in thousands of plants throughout the country. We hesitate to generalize on the basis of a small survey and say that this is the case in 83% of all plants, but at least this is an indicator of standard practice.

And once the product is on the approved list, it is the responsibility of the purchasing agent to make the decision as well as to sign the order. We operate in a competitive business world-competition in materials, in design, in service, and in cost. To maintain a competitive position in selling, the company must recognize competition in procurement. And all surveys to the contrary notwithstanding, it is the purchasing agent's job to probe this competitive situation and to buy accordingly. Progressive management in more than 12,000 American industrial plants stands behind this concept of purchasing.

#### Specific Cases

The sales program that is based on by-passing the purchasing agent, like the survey that is based on the same principle, is blind to current science and practice in purchasing. It fails, not for want of proving acceptability of the product, but for want of proper cultivation and information and contacts at the point where the final selection is made, where the several acceptable makes are weighed to determine the one most favorable purchase.

Generalizations are always open

to question. The individual testimony as to specific cases, free from editorial interpretation, tells the most convincing story. Here are a dozen of the comments offered under the heading "Remarks". They are straightforward statements of how electrical controls are purchased in representative industrial organizations:

- 1. "Our Engineering Department supplies Purchasing Department with an approved list of suppliers, but we in Purchasing decide on vendor."
- 2. "Our Engineering Department makes all decisions regarding electrical specifications and the Purchasing Department makes the decision regarding the vendor, unless our customer specifies a certain manufacturer."
- 3. "Purchasing is not concerned too much with whose make is specified, as we feel free to purchase the one requested or equivalent, depending on quality and cost. Articles would then be purchased from some concern among a certain list of approved suppliers, by Purchasing."
- 4. "Final authority for selection of source of supply rests with Purchasing Department, but the Purchasing Department in this plant confers with plant and maintenance engineers in an effort to arrive at a selection mutually agreeable to all departments, if possible."
- 5. "We endeavor to standardize this type of equipment as a matter of company policy. If there is any question we sit down and talk it over to determine the best answer for the good of the company. It is the Purchasing Executive's responsibility to see that this result is obtained."
- 6. "The items listed concern us primarily from a maintenance standpoint. In these cases we consult with the Plant Engineer or Chief Electrician. If items were incorporated in our product, the Chief Engineer or one of his assistants would be consulted. In the development of requirements, Maintenance and Engineering work through the Purchasing Department."
- 7. "The controlling factor with us in purchasing electrical equipment of any character, and which will apply generally to almost any commodity, is service and quality, provided of course our engineering and plant departments give the option to approve substitute equipment. Company policy does not permit any individual entering into purchase commitments unless through the Purchasing Departments."
- 8. "Probably 90% of the machines we turn out are entirely special, many of them requiring very complicated control mechanism. As a result of this, most of the electrical specifications are gotten up by the electrical engineers of various companies called in to consult with our engineers. In other cases, where machines are nearly standard, the make of electrical equipment is frequently specified by our customer. However, in the case of standard items ordinarily carried in stock by us, these are all purchased through the Purchasing Department from any of an approved list of suppliers."

9. "The Chief Engineer keeps us posted on performance, but there are any number of manufacturers on our list whose equipment is approved, and the actual placing of orders is a Purchasing Department prerogative. We in turn take into consideration certain other factors in dividing our business, i.e., price, delivery, standardization by types of equipment, etc. For example, in certain types of machinery a particular cross-the-line starter may have proven most valuable, but the machine right next to it may have a different operating condition requiring different characteristics."

10. "In the purchase of the materials in question, our plant and design executives advise our Purchasing Agent the characteristics and specifications. From this point on, our Purchasing Agent is sole judge of the supplier. However, in specialized technical materials, in many cases the department head may conduct research with possible suppliers and carry on a good many preliminary details, but again even in this case our Purchasing



Agent is consulted. If the points in question are satisfactory from his contacts and his information, he will place the order as directed." (Answered by an Advertising Manager.)

11. "On all factory supplies where requisitions originate in the tool crib or Maintenance Department, unless the article required is special, or trial and elimination have proven a certain manufactured article to be the best, the Purchasing Department has free choice of source. In the case of production materials including manufactured articles such as electrical controls, motors, switches, etc., the Engineering Department specifies the type of material or a manufacturer's catalogue item. But, with few exceptions the Engineering Department sets up alternates which allow the Purchasing Department to make a choice of sources ranging from two to ten or more.

"Frankly, our Engineering, Production and Tool Design Departments work very closely with us and, if they require the services of sales engineers they contact the Purchasing Department and we, in turn, invite the representative to call."

12. "It is rather difficult to have statistics reflect the complex situation surrounding the specification of any equipment, especially in a large organization. We feel that no one appreciates more

than you do that purchasing, aside from the mechanics of the procedure, is not an independent function but the culmination of a multiplexity of functions embraced by production, engineering and administration.

"In the case of maintenance, we are guided, to a large extent, in the selection of suppliers by the experience of our maintenance staff with regard to the performance of the various makes of equipment which we may have installed, with the idea of standardizing to as great a degree as possible for the purpose of interchangeability of replacement parts. In those cases of special application, the Purchasing Department depends on the recommendation of the Plant Engineer, requesting that he keep his specifications in as general terms as possible so as to permit competitive bidding, not only from the standpoint of price, which in most cases is the same from all suppliers, but also quick delivery.

"In the case of electrical control equipment purchased for capital account with other equipment, such as machine tools, we leave our specification as open as possible, thereby permitting the supplier to use his judgment and experience in supplying a product which has proved its worth in connection with his own apparatus or one on which he may have standardized, thereby eliminating any delay in delivery of the finished equipment due to non-availability of accessory equipment.

"In the case of electrical equipment purchased for capital account where the order is placed directly with the supplier, we request our Engineering Department to keep their specifications as broad as possible and, if it is necessary to use nomenclature of a particular manufacturing organization to describe the article, we request that equal equipment of other makes be accepted.

"Electrical control equipment carried in inventory for standard products is purchased on a basis of general specification of the Engineering Department from an approved list.

"Electrical control equipment purchased for engineered products is, in a large part, dependent upon whether or not the manufacturer of the driving motor equipment is a control manufacturer, in which case it is highly logical that the control would be ordered from the supplier furnishing the motor—price and delivery being acceptable.

"In normal times, there is very little leeway in the purchase of electrical control or motor equipment in that our customers, in placing their orders with us, express definite ideas as to make to be supplied. In such cases where this does not apply, the selection of supplier is dependent upon price and delivery. At the present time, due to the delivery situation, our customers have extended much greater leeway with regard to the specific make of electrical equipment which they will accept, thereby permitting our Purchasing Department to place their commitment with the supplier best suited to meet our requirements at the time the commitment is made.

"In general, the specification of electrical control equipment is determined in the field by the user, who is the individual who will ultimately have to live with the product and we feel that his experience with a particular make of equipment should be the standard upon which his future purchases are specified."



Emergency alternative methods for the standard coal-tar creosote treatment have been developed with some success

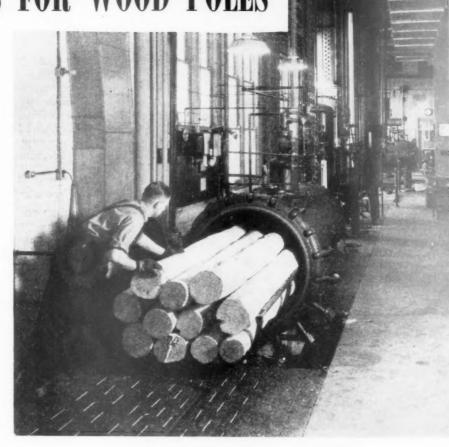
Here is the test data on such practice

By J. OSCAR BLEW, JR.

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Madison, Wisconsin

OAL-TAR creosote may be considered as the standard wood preservative in the United States, since out of the 278 million cubic feet of wood treated in 1944 more than 268 million cubic feet, or over 96%, were treated with creosote or solutions containing creosote. The current treating specifications of the Federal Government (TT-W-571b, Recommended Treating Practice) recommend the use of coal-tar creosote, creosote-coal-tar solution, or creosote petroleum solution for the treatment of wood that is to be used in contact with the ground or water. For the treatment of telephone and power line poles, straight coal-tar creosote only is recommended in this specification. The various pole treating specifications of the American Wood Preservers' Association also recommend the use of straight coaltar creosote except for Douglas fir, hemlock, and red cedar, for which either creosote or creosote mixtures may be used. Specifications of individual utility companies generally include similar requirements. With the increasing demand for creosoted wood and the limited supply of this preservative now available, producers and users of treated wood are facing a difficult situation.

Address at the Fifteenth Annual Midwinter Conference of the Public Utility Buyers Group, National Association of Purchasing Agents, Chicago, February 5, 1946.



Forest Products Laboratory Experimental Pressure Treating Cylinder
This equipment is employed in studies conducted on the treatment of poles, ties, posts and other products.

The present demand for creosote is probably as great as or greater than at any time in the history of the wood preserving industry. In the face of this situation is the present standstill in production due to labor-management difficulties in the steel industry which is the important source of coal-tar. The continued shortage of creosote imports plus a domestic product which in certain respects has thus far failed to reach its prewar quality are other factors contributing to the present situation. The creosote outlook for 1946 is therefore not bright and many commercial treating plants may be forced to make a choice of either canceling orders or using some other preservative. The question therefore is: "What preservatives are available as emergency alternates for coal-tar creosote?'

This question has been raised before and some thought has been given to methods of solution. At the start of World War II the Forest Products Laboratory made a study of the preservative supply situation and a paper, "Preservatives, Priorities and Processes," by Hunt, Baechler, and Blew, was presented at the 1942 meeting of the American Wood Preservers' Association.

#### Preservatives to Consider

It is not possible to predict, with any degree of accuracy, how far apart the creosote supplies and demands are going to be during the current year. It is safe to assume, however, that a substantial quantity of this preservative will continue to be available. There is no need therefore for a complete substitution of other preservatives. When it is



J. Oscar Blew, Jr., Technologist, Forest Products Laboratory

necessary, however, to make a change to meet a local shortage the following preservatives can be considered as emergency alternates:

(1) Creosote mixtures;

(2) Toxic oils other than creosote;

(3) Water borne preservatives.

#### Creosote Mixtures

There are a number of available products which can be used in mixtures with coal-tar creosote for the purpose of conserving the supply of that preservative. Because of the uncertainty of the value of some of these products, however, it is desirable if possible to use at least 50% coal-tar creosote in any mixtures that are used. Creosote-petroleum solution and creosote-coal-tar solution are preservatives that are not new to the wood preserving industry. Crossties have been widely treated with these solutions for many years and with complete success, but they have found very limited use in the treatment of poles. Lodgepole pine and Douglas fir poles pressure treated with creosotepetroleum (60-40 and 75-25 solutions) and installed by the Great Northern Railroad in Montana and Washington in 1928 and 1929 were reported to be showing no removals due to decay after 12 and 13 years' service. The Kansas Power and Light Company in 1916 and 1917 set 335 poles of southern pine pressure treated with a 6 pound retention of creosote-coal-tar solution near Abilene, Kansas. This oil was reported to have a 38% residue. Some of the poles were removed for various causes, but of 252 remaining in service at the end of 22 to 23 years, none showed decay. Jack pine

poles similarly treated have been used by the Canadian Pacific Railroad in Canada since 1926 and 1929 with no removals due to decay after 14 and 17 years of service.

Creosote-petroleum-pentachlorophenol mixtures are of recent use in the treatment of poles. There is also the possibility of mixing water-gas tar, wood-tar creosotes, and oil-tar creosote with coal-tar creosote. Oil preservatives and their respective merits will be discussed later, but in using them as diluents or blending agents with coal-tar creosote it is important that they be compatible with the creosote and not cause sludging or other operating difficulties. The treating solution should also meet any special requirements, such as a clean surface and freedom from bleeding.

#### Toxic Oils Other Than Creosote

Certain toxic oils other than coaltar creosote are available to the wood-preserving industry although their availability may be limited in certain areas. Some have been tested in service so that their degree of effectiveness is reasonably well established; others are still unproven and their use is attended with greater uncertainty as to results. In either event, they should receive careful consideration.

Solutions of polychlorinated phenols, principally pentachlorophenol, in petroleum solvents, have been widely used by the armed services during the war. Tent poles and tent pins were treated by pressure and nonpressure impregnation methods while container plywood, boats, vehicles, and other wood products were treated by superficial methods with these preservatives. Poles have been treated with pentachlorophenol solutions since about 1941 principally by non-pressure treatments.

The toxicity of pentachlorophenol appears to be from 10 to 100 times greater than that of coal-tar creosote, depending upon the creosote and the toxicity values used for comparison. Even when diluted to 5% concentration, the toxicity of pentachlorophenol solution appears to be equal to or greater than the toxicity of the coal-tar creosotes in common use. From the standpoint of toxicity 5% solutions of this chemical appear suitable for wood preservation when used in sufficient absorptions.

Toxicity alone is, of course, no assurance of preservative effectiveness since permanence, as measured by chemical stability, volatility and

leachability in water, is equally important. In this respect, pentachlorophenol is reported to be highly satisfactory.

The commercial manufacture of pentachlorophenol was started about 10 years ago, and nine years ago the Forest Products Laboratory installed in Mississippi experimental southern yellow pine posts that were pressure treated with waste crank case oil solutions containing approximately 5% and 3% pentachlorophenol. A recent inspection of these posts (see Table I) after nine years service showed 97 out of 99 posts treated with an average of 6.7 pounds per cubic foot of the 5% solution to be in good condition and two posts to have some decay. Of 99 posts treated with a similar retention of 3% pentachlorophenol solution, 96 were in good condition, two posts showed some decay, and one post was removed on account of decay. Of 98 posts treated with an average coal-tar creosote retention of 6 pounds per cubic foot, 90 were in good condition, and 8 showed some decay or decay and termite attack. Untreated posts had an average life of 3.2 years in the test.

#### Importance of Solvents

The penetrating properties of the pentachlorophenol solution and the paintability of the treated wood are influenced chiefly by the solvents used in the solution. Light oils usually penetrate wood better than viscous oils. Oils with a viscosity as high as creosote or higher, however, cannot be expected to excel creosote in penetrating properties. Such oils are not likely to leave the wood in a paintable condition.

There is evidence to indicate that treating solutions made with the lighter fuel oils will not perform so well as those containing the heavier petroleum oils. Some petroleum solvents when treated with pentachlorophenol are likely to sludge and cause plant operating difficulties or dirty poles. Some progress has been made in the direction of finding solvents that are not objectionable from the standpoint of sludging.

The cost of pentachlorophenol treating solutions is understood to be favorable on a competitive basis with coal-tar creosote. It is estimated that a sufficient quantity of this preservative can be manufactured during 1946 to prepare from 25 to 35 million gallons of 5% treating solution. This is equivalent approximately to from 13 to 25% of the quantity of creosote and creosote

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Pentachlorophenol, 4.82% (by weight) in used crank-case oil	66	Solution	6.0	6.00	6.7	1.6	16	. 98.0	~	2.0	1	1	1	1	1	1	1	1		1	i 	
Pentachlorophenol, 3.02% (by weight) in used grank-case oil	B	Solution	3.1	11.4	4.9	1.8	56	97.0	~	5.0		1	1			1.0	1					
Sodium bichromate	85	:Salt	. 59	1.14:		.11	30	8.0%	4	h.1	7	7.1	35	: 35.7	7 :: 1	1.0	*	4.1	1	8.2	2 : 13	3 : 13.3
Sodium chromate	66 :	:341t	.70	1.19:	: 66.	.10	17	: 18.3	*	4.3	\$	5.4	43	***************************************	1	1	9	6.5	5 1 18	19.3	3 : 5	1 25.8
Tanalith	100	:Salt	.38	. 47	.35 :	.07	1 70	1 70.0	.:.	: 21.0	eu 	5.0		3.0	2 : 3	3.0	1	1.0				0.4
Tetrachlorophenol, 2,9% (by weight)	86 ::	Solutions	20	115.1	7.1	3.1	: 78	79.6	19	19.4	1				0					1		
Tetrachlorophenol, 4.83% (by "elpht) in used crank-case oil	66	Solution	3.5	4.0	5.8	3.5	96	97.0	m	3.0	1	1	1							1		
Water-gas tar	66	:011	1.2	:19.0	6.3 :	3.0	: 91	91.9	·!\	: 5.1	1	1	· · · ·	3.0		1	1	,				
Zing chloride	100	Salt	.67	1.11	46.	.10	28	58.0	٥	2.0		8.0	2	30.0		1.0				1		2.0
Zino-meta-arsenite	96	:Salt :	:25:	*	. 42	90.	96 :	0.86	0	2.0	1	1	1	!	1		1	1		1		
Untreated posts (set February 1977) :	₹59 :	1	1	1	1	1	1	1	1	1	1	1	1	1		1 3.1	: 61	: 93.6			1 : 65	: 100.0
Posts set after February 1937																						
er and	3.7£	1	1	1	1	}	1	1	!	1	1	1	1	1	n	33.3	51	63.6		m.	1: 33	100.0
(CUSO, )5 (Set Hay 1941)	100	Salt	1	1	(.35	1	86	98.0		1.0		1.0	1									
Osmoplastic-groundline treatment (Set Feb. 1941)	100	Mixture :	1	1	at .	1	634	63.0	m	3.0	m	3.0	0	6	1	1	!	1	· · · · ·			

TABLE I

Condition of Round Southern Yellow Pine Experimental Fence Posts on the Harrison Experimental Forest, Saucier, Mississippi, after about 4½ years' to 9 years' service.

Data compiled by U. S. Department of Agriculture, Forest Service, Forest Products Laboratory, Madison, Wisconsin, January 18, 1946

Antreated posts installed during 1937 had an average life of 3.0 years, those installed during 1936 had an sverage life of 19. years - Grand sverage lovelagrouns - 3.2 years.

Effrented by fouble diffusion process.

Merage application her root - 15° band (% above and 12° below the groundline) AMOt inspected below groundline, in order to avoid disturbing the maper bindage.

Epsterioration in one post at faces out.

In pointing if for willing.

Decay and termites ensurently gained access to 2 posts through frose out in pointing.

Asverses application.

Specy and termites aporternily gained eccess to one post through faces out in pointing.

For driving.

Phonony at bottoms of one post which spread to be have been out off in setting.

Agastallation included 100 posts gar each treatment. This musber has since been reduced in some cases dus to losses by fire and pilferage.

Beach on the 100 nosts rested in each group unless otherwise indicated.
Abbeorption walues based on 97 posts.
Abbeorption values based on 68 posts.
Abbeorption values based on 98 posts.

volution consumed by the wood preserving industry during 1944.

In an emergency, the use of pentachlorophenol solutions or creosote - petroleum - pentachlorophenol mixtures appears to be a safe alternate for coal-tar creosote if the requirements of existing creosoting specifications as to absorptions and retentions are adhered to. An investigator has recommended that the petroleum should have a flash point of not less than 190°F. as determined by the Pensky Martens closed tester (ASTM Standard D-93), and a pentachlorophenol solvency of not less than 10% at 75°F. It should also be of such a quality that the treating solutions, with or without creosote, can be repeatedly cosity according to the oil from which it is made, as well as the conditions of manufacture. Much of it is too viscous to be suitable for wood preservation but satisfactory absorptions and penetrations may be obtained with the less viscous tars. Service tests show that water-gas tar is a very good preservative when properly applied and is well worth considering as a substitute for coaltar creosote for land use. For use with poles requiring a clean surface, however, it may be objectionable.

#### Low-Temperature Creosotes

Low-temperature coal-tar creosotes differ in chemical composition from high-temperature coal-tar creosotes as shown by pronounced dif-

Butt-creosoted Lodgepole Pine Poles
Butt treatment will provide 25 or more years of service in the dry sections of
Rocky Mountain region. Full-length treatment of this species, however, is required
for most parts of the United States.

used and heated during treatment without causing operating difficulties from undue sludging or gumming. Until suitable evidence is obtained to show that lower concentrations are adequate, the pentachlorophenol solutions to be used as such or to be blended with creosote should contain 5% by weight of this chemical.

#### Water-Gas Tar

Most of the water-gas tar now being produced is used in road tars. The exact amount used in wood preservation, including that which is distilled to produce a creosote and that which is blended with coal-tar creosote, is difficult to ascertain. Water-gas tar varies greatly in visferences in a number of properties, such as specific gravity of fractions, sulfonation residue, tar-acid content, and napthalene content. Some of them have given very good results in service tests. The total amount of these oils available for wood preservation is not large and apparently it is being used mainly in mixture with high-temperature coal-tar creosote.

Lignite coal-tar creosote, in mixture with coal-tar creosote and petroleum oil, has been used by one railroad company for some years. The limited service data thus far available fail to show that lignite-tar creosote is equal to coal-tar creosote, but in certain regions and under certain conditions its use may well be considered.

The Portland (Oregon) Gas and Coke Company, in carbonizing petroleum oils for the manufacture of municipal gas, produces an oil tar from which a creosote may be distilled. Some tests on this creosote by the block method indicate that it has considerable promise as a wood preservative.

#### Wood-Tar Creosotes

Although wood-tar creosotes have been available in small quantities for many years, they have never been used extensively in pressure treatments. This has been due in part to the relatively limited quantities produced and, to some degree perhaps, to lack of sufficient standardization. For the most part, these products appear to have been sold for non-pressure use although there have been numerous exceptions.

No very positive statements can be made about the effectiveness of wood-tar creosotes because of the differences in character of the products obtained from different sources. The test data available indicate a considerable degree of effectiveness but do not show that the wood-tar creosotes can be safely assumed to be equal to coal-tar creosotes. Red oak ties with an absorption of about 10 pounds of wood-tar creosote per cubic foot in test for 26 years at Madison, Wisconsin, will probably have an average life of about 20 years. Another group of hardwood ties in the same test that are mostly red oak and were treated with 9 to 10 pounds per cubic foot of a 50-50 mixture of wood-tar creosote and coal-tar creosote will have an average life of about 22 years or more.

In the Forest Service fence post study in Mississippi (see Table I) southern pine fence posts pressure treated with 6.6 pounds of a wood tar creosote per cubic foot were showing 25% replacements at the end of 9 years, which means that they will probably have an average life of only 12 to 15 years. In the Barro Colorado Island, Panama Canal Zone, tests also, the specimens treated with wood-tar creosote are not standing up so well as those treated with coal-tar creosote.

Though the evidence fails to indicate that wood-tar creosotes are equal to coal-tar creosotes in ability to prevent decay and termite attack, the wood-tar creosotes do have considerable protective value. They have been used occasionally in the past in mixture with coal-tar creosote, as an accommodation to the wood-tar producer. Opportunities

may now occur where this would be of advantage to both the producer and the user of the wood-tar creosote, and thus serve to extend the supply of coal-tar creosote. When such mixtures are contemplated, it will be advisable to consider the quality of the wood-tar creosote very carefully and, if possible, have it meet a definite specification. High acidity and high volatility in the wood-tar product should be avoided. Tests should also be made to assure that the oils used will mix satisfactorily without producing a sludge during the mixing operation or subsequent heating.

#### Naphthenates

Copper naphthenate and, probably, some of the other metallic naphthenates, have considerable value as wood preservatives. They were used by the Navy during the war on wood boats. Their use, up to the present time, has been confined almost exclusively to surface applications which necessarily has limited their effectiveness and, until recently, they were sold only in pro-prietary preservatives. The growing interest in the naphthenates as preservatives appears to arise from the increasing quantities of naphthenic acids being produced as byproducts of the petroleum industry and the urge to find markets for them.

The effectiveness of the naphthenates as wood preservatives has not received adequate study, and the time and extent of their use is insufficient to furnish conclusive information as to the absorptions that should be injected for best results. It is possible that petroleum solutions of copper naphthenate could be made to protect wood as well as creosote does, but it remains to be seen what solution concentrations and absorptions would be necessary and whether they would be economically feasible. The fragmentary information available from various minor studies of copper naphthenate give favorable indications with regard to toxicity, permanence, and field tests.

Brush treatments with a naphthenate preservative are said to have given only mediocre protection, but apparently satisfactory protection can be obtained from substantial absorptions injected by pressure. Field tests were started in 1941 by the Forest Products Laboratory, in cooperation with a producer of naphthenates, in which surface and impregnation treatments in a variety of absorptions are being compared.

These tests clearly demonstrate the inadequacy of superficial applications where protection against decay and termites is required. When applied by pressure, however, zinc and copper naphthenate preservatives are performing reasonably well.

It seems doubtful that copper naphthenate will be sufficiently plentiful or cheap in the near future to be of much use as a substitute for creosote in pressure treatments. At prices comparative with current creosote prices, however, copper naphthenate solutions would warrant serious consideration. They appear sufficiently promising to justify extensive experimental use even now, despite their present cost.

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The following water-borne pre-

50% or greater increase in preservative retention over that required in the above mentioned specification should add substantially to their protective value.

Results on fence posts treated with these preservatives are shown in Table I. The Great Northern Railway during 1929 installed in Montana 3,725 Douglas fir poles treated with one-half pound of zinc chloride, and less than 1% of these poles were removed on account of decay during 12 years of service. Southern pine poles treated with zinc meta arsenite have been used with some success in various parts of the United States.

Other water-borne preservatives showing promise are Chemonits,



Service Tests on Posts and Stakes Treated With Various Preservatives

Service tests on treated products are conducted in various sections of the United States and in several foreign countries.

servatives are recommended in Federal Specification TT-W-571b for the treatment of wood not to be used in contact with the ground and water:

Zinc chloride
Celcure
Chromated zinc chloride
Wolman salt (Tanalith)
Zinc meta arsenite

1.0 pound per cu. from 5,50 pound per cu. from 5,55 pound per

Water-borne preservatives are subject to leaching and therefore will not perform so satisfactorily as creosote under wet conditions. Consequently their use for poles has been limited. They are capable of furnishing considerable protection against decay and termites, however, especially when used in dry climates. If emergency conditions seem to warrant their use in other areas a

greensalt (ascu), and Osmose preservatives. These proprietary preservatives contain materials known to be effective against decay and termites and might be considered as emergency alternates for creosote. Osmose preservatives have been in use for the treatment of poles for approximately 10 years. Southern pine poles treated full length and installed in Alabama were reported to be showing satisfactory service after 6 years' service. Of the experimental fence posts treated full-length with Osmose preservatives and installed by the Forest Products Laboratory in Mississippi, 4% have been removed and 80% are in condition after 9 years (see Table I).

(Continued on page 338)



EVERY purchasing program and purchasing decision involves the consideration of three basic factors. The buyer is concerned with (1) the things he buys, (2) the way he buys them, and (3) the conditions under which he is currently doing business. So, from the very nature of his function and responsibility, he must be an alert and analytical observer of trends, and especially of what is new. He must keep himself constantly informed about new products and processes as they are developed and become available to his company's use, about new purchasing techniques and regulations affecting materials and their distribution, and about the economic social, competitive and political forces that shape the world in which business is done. Then it becomes his duty to adapt his purchasing program and policies to all of these

We have all had a lot of practice in change and flexibility during the Four aspects of the present business situation to which purchasing policies must be adapted, and out of which the new economic balance must be achieved

#### By STUART F. HEINRITZ

past several years of wartime buying, dealing with new and unfamiliar materials, new types of contracts and constantly changing regulations, and abnormal conditions of business. So completely has this factor of change dominated our action and our thinking, that a good deal of emphasis is very properly being placed today on a return to the fundamental principles on which all buying should be based. At the same time, it needs no prophet to remind us that the one sure thing about the future is that this process of change will continue. Reconversion does not mean that we are going back to prewar conditions and standards and ways of doing business. Foresight and adaptability will still be the measure of purchasing competence and accomplishment in the period ahead.

Of the three factors enumerated above, the business and economic climate in which we work is by all odds the most important. Nominally it may seem to be an "outside" influence, of only indirect effect. Actually, it is the frame within which the details of what and how we buy must be fitted, and is thus the determining factor in our purchasing policies and decisions. It establishes the balance between cost, supply and demand; hence, it determines the decision as to marketable quality and quantity. It sets up the relative value of competitive materials, old and new, not only in terms of utility and cost, but in terms of available capacity, public acceptance and demand, and a variety of competitive conditions and governmental subsidies based on national policy of the moment. It prompts the character and degree of price controls and distribution regulations. And it redefines the functional role of procurement and of business itself.

In looking at these forces as we

Address at the Executives' Night meeting of the Purchasing Agents Association of Tulsa, February 20, 1946.

see them today, it is important to remember that they are the expression of world trends affecting every nation, regardless of its political and governmental system or the type of its business structure; and we are a part of that world. We are all aware of how, during the period of war production and the consequent shortage of consumer goods, great pressures of desire and demand for these goods were built up to become a great postwar economic force. In exactly the same way, while every other consideration was subordinated to the urgency of getting together and winning a war, great social and economic and political stresses were held in leash, gathering power. Now they are asserting themselves.

We had generally expected—rather naively, as it now appears -that the end of the war would see an immediate return to peacetime

come vocal. For we are all a part of the picture, and have a voice in the decisions directing the course of ideas and events. As buyers, as business men, and as citizens, we have a responsibility to use our best judgment, our influence and our professional skills to help shape the business world of tomorrow on the best and broadest lines we can envision. Everything we do, the way we approach our job, contributes to that end and helps to spell out the future of our industrial system.

And it is no small or insignificant influence that we can exert. It is not to be measured in the ratio of one opinion among a hundred and forty million citizens. For one fact about the present situation is that we have virtually no economic leadership in our government. During the war years, the government was a customer, predominantly economic-minded. Able business men were program without a practical policy. It is the responsibility of American business to supply this deficiency.

#### The Menace of Inflation

Let's take a look at some of these trend factors affecting business. One of the economic conditions that we are facing in the immediate future is the possibility of inflation. That affects purchasing directly in respect to the prices we pay and the value we receive in return for the expenditure of our dollars. Inflation is already a fact in many countries of the world, not only among the defeated nations but among our allies as well. Let us not be deceived into smugness of the fact that American dollars are currently worth 6000 to 1 in such stricken areas as China and Austria. We are a part of the same world, and the spiral has already started here. We have had a few striking examples of rocketing prices when ceilings have been tentatively removed on some fields. A rise of 30% in living costs is admitted, and the predictions from Washington itself are for another 10% in 1946, with upward pressures gaining in strength. When we recall the signs which Leon Henderson posted throughout the government offices reminding us that "Inflation comes in 5% increases," this makes us pause for

Still, except for sitting on the lid through price controls, our national policies are encouraging that development rather than checking it. Sitting on the lid merely serves to intensify the stresses of the situation. When the lid blows off, Mr. Bowles will not be the only one to take a ride; we shall all go with him. We pay lip service to the campaign against inflation, but the more compelling motive and objective is revealed in the commitment to a policy of raising incomes. That in itself is a worthy motive, but it can not be considered without its relation to the price line which determines the value of income. Up to a few weeks ago, the govern-ment's "Pay-Price Policy" was stated as permitting wage increases that would not increase the cost of the product. Superficially, at least, this was an attempt to fit the social program into the economic framework. A figure was arbitrarily picked out of the air, and when this proved impracticable, throwing things out of balance, the policy was restated to permit price increases made necessary by the wage

### LOOKS AT BUSINESS

production on an unprecedented scale to satisfy the buying demand for consumer goods. We thought that providing automobile and refrigerators and shirts for everybody would keep us busy and would insure industrial peace and prosperity. Instead, that process of reconversion and production has been delayed by the eruption of these social and economic forces, resulting in the confusion and turmoil of a social readjustment which is taking first place in our national life. Of course we still want automobiles and refrigerators and shirts, but those things can wait on the settlement of these other issues. It illustrates what history has always taught—that the force of an idea is stronger than any material consideration.

#### We Can Influence Trends

This is the situation to which we must now adopt ourselves. We must recognize these trends and try to understand them. But it does not necessarily follow that we must accept or bow to all the new ideas and voices which have suddenly becalled to Washington and held positions of influence and respect in the administration. Now that the war is over, the business men have gone back home, and the administration has become socially-minded, resuming a trend that was interrupted in the national emergency. Business leadership, for better or worse, has been abdicated in government, to be worked out among business men as best they may in the face of present social policies.

In the top circles of the present administration, there is a deeprooted conviction that this nation is destined to assume the economic leadership of the world. That implies a great faith in the bigness, richness, and resourcefulness of American industry. Unfortunately, it is an unreasoning-and unreasonable-faith, and it leads to the weak corollary that economic leadership can be left to destiny. It forgets that social programs must be implemented by a sound economy, and that the two must be worked out together, that clashes and contradictions can not be settled by edict, and that there can be no effective

advances. There is a world of difference between the two, and the price line is retreating accordingly.

Inflation is a lack of balance. The reasons are well known-a shortage of production of things to buy, coupled with excess purchasing power. The mechanics of price are also well known-they are kept down by increasing supply and stimulating competition. To attempt to control inflation without going to these roots of the condition is like treating cancer with a strip of adhesive plaster on the surface. During wartime, when civilian production was necessarily held to a minimum and this factor of economic balance was temporarily unavailable, an intelligent and effective effort was made to achieve comparable results by draining or deferring excess purchasing power through taxation and compulsory savings, so that it could not give effect to the inflationary forces. Now that we are again in a position to carry on a more complete anti-inflationary anti-inflationary campaign, the dominant social program commits us nationally to a policy of building up still more purchasing power, unmindful of the fact that costs are being proportionately-or even disproportionately-forced upward.

#### Seeking a Proper Balance

It is pretty generally understood that we can achieve some sort of an economic balance at any level. Purchasing agents are price-minded, but they are not the proponents of either a low price or a high price economy, so long as they maintain their company in a favorable competitive cost position within its industry under prevailing conditions. They are uniquely interested in price both as buyers and as sellers. They are in favor of prices that will maintain and strengthen their sources of supply, on whom any purchasing program must depend. but it is likewise their responsibility to seek a cost and price level that will stimulate an outlet for their own company's product, without which there would be no business and no occasion to purchase. This mutuality and balance is what makes for a healthy national econ-

The high-price balance of inflation is neither healthy nor permanent. It does not stimulate producution and enterprise. It increases business risk without a commensurate profit. It does not raise the standard of living as the purchasing

power of the dollar declines, and it undermines that standard as the downgrading of quality is resorted to as an offset to rising costs. It depreciates the value of accumulated resources, working a particular hardship on that large sector of the population living on relatively low fixed incomes. Above all, it carries the constant threat of the inevitable "morning after," when values will adjust themselves to the sound basis which only real production-the increment of value added through industrial and commercial processes-can achieve.

In the face of this trend, we have. the testimony of no less an authority than Wendell Berge, Assistant Attorney General of the United States, that the preservation of the competitive system in American industry, and the economically sound price level which results from that system, depend on the collective (but not collusive) policy and action of its value-conscious purchasing men. In the constant search for value, which is a part of their buying responsibility, they not only conserve the purchasing power of their company's dollar, but maintain the integrity of the national dollar. The sooner and the more clearly we recognize this opportunity, and the harder we work at it-purchasing men backed with the full support of their company management the better it will be for every factor in our national life. This is a time for purchasing agents to get tough, for it is only through this relentless search for value that we may hope to avoid price excesses and inflation.

#### Ability to Pay

A second condition that the buyer sees as he looks at business is the growing acceptance of a philosophy of remuneration based on the ability to pay rather than on value received. Business policies and purchasing policies must in the long run reflect the prevailing economic philosophy. At the moment it is applied to payment for services. It is only a step from this type of thinking to its application to all manner of goods which we buy. That would be a throwback to old and vicious merchandising practices and a body blow to democratic principles. Further, it involves an element of interference and control that industry has every right to resent and resist most forcibly. It tends to penalize rather than to encourage efficiency in management and operation.

Most business men are not so much concerned with the purely monetary amounts involved as they are with these corollaries that undermine the initiative and prerogatives of management. Purchasing agents, too, have the same concern. In selecting their suppliers and establishing a business relationship, the character of the supplier is the first and most important factor. That character is personified in the management, and if management is shackled and impotent, the buyer has no security of service.

But this is also the expression of a trend that need not be vicious if it is properly directed. Long before the war, leading economists were exploring the question of what constitutes a reasonable and fair return on invested capital. Our tax structure was arranged on a sliding scale, based on the ability to pay. Many progressive employers were devising profit sharing plans as a means of accepting their social responsibility of maintaining employment in their communities and providing security for their workers. and they found that it proved to be very good business indeed. Profit sharing involves a recognition of the ability to pay, coupled with value received from those associated

#### Cost Analysis

with the enterprise as employees.

The phase of this philosophy that is probably most resented by management is the demand that company books of account be opened for inspection, so that essentially confidential information is revealed to parties of other interests. But there is precedent for this also. The corporate form of business organization, with widely scattered ownership and an open market for shares. is in itself a step in this direction if anyone wishes to take advantage of it. Company books are open to tax auditors, to the extent that accounting methods as well as the figures themselves come under review. The majority of wartime contracts, with provision for renegotiation, provide an even more direct application. And purchasing agents themselves have developed the science of cost analysis to a high degree, probing the costs of their suppliers as a means of assuring themselves of fair prices and gathering potent arguments for use in the negotiation of favorable contracts.

This last-named aspect of the trend suggests the basic means by which its less desirable tendencies may be overcome, or directed into useful channels. Cost analysis, an integral part of purchasing science, should be applied on a broader scale and more aggressively than ever before. Every purchasing man must constitute himself a fact finding committee of one, and concentrate his buying efforts on the attainment of value. Only in that way can we hope to combat successfully the philosophy which seeks wage or price levels without relation to the service or value for which this remuneration is demanded.

#### Monopoly in Labor

A third condition that the buyer sees as he looks at business is the threat of monopoly. This is not only in reference to the difficulties of small business, although those difficulties are very real. Our laws recognize the vicious and paralyzing effects of monopolies in goods and public services, and have outlawed or regulated such conditions wherever they have appeared. On the whole, we have been rather successful in carrying out this policy. But a new form of monopoly has appeared, which is not only outside of the current law but seems to enjoy a certain amount of official sanction.

The breakdown of production in our major industries in recent weeks has not been due to the shortage or withholding of materials, or to lack of facilities, or, in most instances, to difficulties which could not have been settled locally. Rather, they have been due to a monopoly on the human services necessary to fabrication and distribution. Any number of cases might be cited where this has been the case. The emergency which completely halted all normal activity in the nation's largest city on February 12th because of lack of fuel, was not attributable to any real lack of materials or production. The petroleum industry had done its job well; ample supplies were available at the very doorstep of New York. But a monopoly on the means of bringing those essential supplies across the last narrow water barrier to Manhattan Island effectively blocked their utilization for the purposes for which they were intended, and negated all the effort and the value of bringing them so close to their final destination. On the same day Philadelphia traffic was at a standstill, Pittsburgh was dark, and the business survey committee of the Chicago Purchasing Agents Association reported a condition of "creeping paralysis"—all due to comparable causes.

Economics is a science involving human relationships and reactions and sensibilities as well as the more tangible elements of goods and facilities and prices. For many years, economists have observed two taboos of convention in referring to the human factor. It has not been "respectable" for the economist to refer to labor as a commodity, subject to the law of supply and demand, or to refer to labor as a monopoly even when all the force and technique of monopoly have been applied to the manipulation of labor. But the second of these taboos is even now being overcome. Economists can no longer explain current conditions without calling monopoly by its right name, whether in respect to goods or services, and by usage in recent months they have made that term respectable in the language of their science.

The next step is as obvious as economic law itself. Recognizing monopoly for what it is, in plain language comparable to any other consideration of the subject, the way is cleared for regulation of this monopoly in the same way that the law has dealt with its other, more impersonal manifestations. That trend is already apparent in pending legislation, and though the process may be drawn out over a considerable period, the corrective measures are surely on the way.

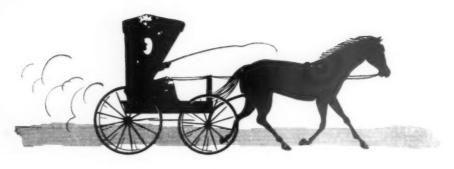
#### The Public Interest

A fourth condition seen in this look at business—one which perhaps embraces all the others in its scope—is the need for a new definition of the public interest. One of the compelling trends in world thought, and one to which all fairminded and forward-looking men will subscribe, is that the public interest must be the chief considera-

(Continued on page 330)



Mr. Wilden says he'll wait.



### GOVERNMENT FIGHTS HORSE - AND - BUGGY

Under the war powers acts, Federal procurement was released from the mandatory use of competitive bids, and was permitted to negotiate its contracts. Those who are concerned with buying policy now believe that an all-out return to former methods would be a backward step

Efficiency in purchasing is just as desirable in peace as in wartime

By A. N. WECKSLER

AVING cleared away much of the red tape from procurement during the war, Government agencies are now seeking to retain some of their new found freedom.

The problems have changed drastically. The Federal Government no longer is the buyer for the bulk of industrial manufactures — although in many commodities, the Government pre-war was, and postwar will be, the largest single purchaser.

In the field of procurements of a military nature, purchases will revert to contracts for research and development, rather than for mass production of armaments. Research contracts, where detailed specifications are lacking, cannot be let through a competitive bid system.

#### **Negotiated Contracts**

On this score, both the Army and the Navy maintain that they should he permitted to retain the system of negotiated contracts which they developed during the war period. It has been generally recognized that without the wide latitude in negotiated purchases during the war, procurements would have become hopelessly bogged down.

On the other hand, it has been generally assumed that during normal periods, there must be wide concessions to the numerous checks and balances required to protect the public interest—even though this may be at the expense of efficient operation.

During the war, the attitude was that the emergency justified procedures which by-passed many of the checks and balances, on the premise that the cost of whatever slippage occurred due to elastic practices could be written off in the interest of the war.

This did not prove necessary. While, obviously, mistakes were made and initial prices might have been high, the process of negotiation kept the buyers in close touch with the market, and the general trend was for an adjustment in price levels in line with the development of production experience by the manufacturer.

The Government procurement agencies contend that negotiated contracts have proved themselves; that in view of their war experience, they should be permitted to continue negotiated purchases in fields where the products involved are not of a generally standard nature.

In addition to the plea that negotiated purchases are an efficient peacetime approach to the purchase of non-standard items, the Government procurement officials contend that it would be in the interest of national preparedness to have purchasing agents in the Government who are trained in emergency techniques—that it is as important to have Government officials trained in placement of negotiated contracts in readiness for a national emergency, as it is to have standby equipment and armaments, with personnel trained to operate them.

#### Competitive Bids

In preparing their case for a continuation of negotiated contracts, Government procurement officials recognize that there are distinct advantages in the competitive bid system, and competitive disadvantages in the use of negotiation in peacetime.

They agree that the competitive bid system has the advantage of providing an impersonal mechanism for the expenditure of public funds, but as in all mechanical operations, they point out, there is a tendency to gloss over the overall inefficiency of the operation.

In contrast to the impersonal process of competitive bidding, the negotiation route subjects the Government department making the purchase to pressures from individual suppliers and local communities, and to all types of political pressure. In addition, the department invites criticism of favoritism in the allocation of contracts and charges of paying exorbitant prices.

To combat these weaknesses in negotiation, it is suggested that the

# SHY OF . . . PURCHASING

discretion as to whether a contract should be let through negotiation should be at a very high level, and that the contract be handled by skilled personnel.

#### Legislation Needed

The Procurement Policy Board (comprised of representatives of the War and Navy Departments, Civilian Production Administration, Maritime Commission, Treasury Department), in considering the Government post-war procurement position, recommended that Congress pass legislation that would give each Government agency "authority to negotiate prices and award contracts, in such form and type as may be suitable, at the discretion of the heads of the agencies".

In the absence of such enabling legislation, some of the agencies have formalized peacetime contracting by negotiation.

Effective last month (March 3), the War Department, through amendment to its Procurement Regulation 2, provided for use of negotiated contracts for secret and research and development procurement.

Standard stock and subsistence supplies will be on a sealed bid, fixed price contract basis, under the amended War Department regulation.

The chiefs of the Army technical services are given discretionary powers in deciding whether advertised bids are feasible on the cur-

1-31-46 PR 13 FORMS OF CONTRACTS [11335] W. D. Standard Procurement Form No. or reject any items of any bid unless qualified by specials. Budget Bureau No. 49-R271
Approval expires 31 July 1946
Serial number
WAR DEPARTMENT

ctific limitation.

Note: See Standard Government Instructions to Bidders, and copy of form of centract, Bid Bond and Performance Bond, which may be obtained upon application. WAR DEPARTMENT
INVITATION FOR BIDS
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WAR DEPARTMENT

WAR DEPARTMENT

FORM OF EID

ISupply Contract;

Opening Date for time Eid

M. 19.

To Place a corporation organized and existing under the laws of the State of NAME OF PURCHASING AGENCY ADDRESS OF PURCHASING AGENCY an individual trading as an individual trading as of the city of th Guarantee will be required with each bid, as ful-lows: 5. The contract will contain provision for the fol-lowing as indicated: (a) Performance Bond: (b) Liquidated Damages: Where copies of plans are requested, a deposit
 will be required to insure their return.

Under the new War Department procurement regulations, a standard form must be followed in the invitation for bids and in the bids themselves. Field procurement officers can set these up in either printed or mimeographed form.

7. The right is reserved, as the interest of the Government may require, to reject any and all bids, to waive any informality in bids received, and to accept



Purchasing — prewar model. Typical bid opening at the Treasury Procurement Division, 1939.

Q 1336

Unless new legislation is passed, such items as military clothing will go back to the bid basis

rent market for specific commodities. Obviously, in some classes of merchandise, even in the most standard categories, the supply outlook makes the advertised bid approach entirely unworkable. However, the general objective is to get back to the competitive bidding system on all standard items as soon as possible, and the procurement officers in the field have been given complete instructions on forms for invitations to bid, how bids are to be submitted, and the general War Department policy relative to awards.

Similar approach is being taken by the Navy, and the other war agencies. Some Government agencies, which during the war were given powers to make negotiated bids when the items to be purchased contributed to the war effort, have reverted to their pre-war practice—and in fact have been making purchases on a competitive bid basis since V-J Day.

Current practices are all based on legal interpretations of what should be the practice in view of the end of the war, recognizing that the war powers acts, while still in effect, are purely temporary pieces of legislation.

#### Proposed Regulations

The various Government agencies concerned are all anxious to obtain legislative clarification of their post-war practices and procurement prerogatives.

It is the general belief that Congress will be reluctant to grant broad authority to Government agencies to use their own discretion on what to negotiate, and where competitive bidding should be used.

If they cannot obtain a blanket discretionary authority, the Government procurement officials will seek to get sanction for the use of negotiated purchases under the following circumstances:

1. When made during the period of a national emergency declared by the President.



2. Where the public exigency will not admit of the delay incident to advertising. (This preserves an existing exception to the Competitive Bid Statutes.)

3. Where the aggregate amount involved does not exceed \$1,000. (This raises the existing limit from \$500, which has been described as inadequate for many field purchases and emergency orders.)

4. When made for personal or professional services. (The Competitive Bid Statutes have not applied to personal services.)

5. Where the supplies or services are to be procured and used outside the limits of the United States and its possessions. (This preserves an existing exception to the Competitive Bid Statute.)

6. If for medicines, medical supplies, hospital or surgical supplies, or prosthetic appliances.

7. If for supplies purchased for authorized resale.

8. If for proprietary or other supplies or services for which it is impracticable to secure competition. (In cases where there is only one producer or where demand exceeds supply, it is pointed out that the competitive bidding procedure is a snare and a delusion, and will result in excessive prices to the Government).

9. Where the agency head determines that the purchase or contract is for experimental, developmental or research work or for manufacture or furnishing of supplies for experimentation, development, research or test. (In these cases, since specifications are usually of a very general nature and subject to frequent change, the procurement must be negotiated to fit the particular situation and the particular contractor, according to the Government agencies. The field of possible contractors is likely to be very limited and the special skills of certain contracts are of paramount importance; consequently, competitive bidding is held to be generally not appropriate.)

10. If for supplies or services where the agency head determines that the character, ingredients or components thereof are such that the purchase or contract should not be publicly disclosed.

11. If for supplies which the agency head determines should be procured without advertising in order to assure standardization of equipment and interchangeability of parts.

12. If for supplies or services where the agency head determines that advertising and competitive

#### Excerpts from the new Procurement Regulations of the War Department

PROCUREMENT OBJECTIVE. It is the War Department's objective to so conduct its procurement activities as to secure its requirements with the least possible expense to the nation. The procedures and policies set forth in these regulations are designed to achieve this purpose by stimulating competition among the Government's suppliers, setting up incentives for efficiency, providing for price analysis, preventing inflationary tendencies, and other means.

NEED FOR COMPETITION. To achieve the War Department's procurement objective contracts must be placed at the lowest possible prices. These may generally be obtained in competitive markets.

EXISTENCE OF COMPETITION. Whenever price competition exists steps shall be taken to secure quotations from the greatest practicable number of qualified producers by means of formal advertising, or informal solicitation. All qualified producers will be afforded an opportunity to submit quotations. All invitations for bids and solicitations will state that the Government reserves the right to reject all bids and quotations received.

FORMAL ADVERTISING REQUIRED. The chiefs of the technical services shall require procurement by formal advertising of all classes of supplies as to which it is determined that (1) an ample supply of the items and the ingredients thereof is available to meet civilian and military requirements; and (2) there are sufficient producers of such supplies reasonable to assure the receipt of competitive bids.

bidding would not produce reasonable prices or suitable quality. (This exception is designed to permit negotiation in situations which are said to have been disclosed as inappropriate for competitive bidding because such bidding has resulted in high prices or improper quality. In regard to the quality of products, there are some items where the skill and experience of particular manufacturers are the only real guarantee of performance. This exception would also permit the procurement by negotiation of scientific or technical apparatus or instruments of precision where

13. Where the agency head determines that it is in the interests of the national defense that any plant, mine or facility of any producer, manufacturer, or other supplier be made or kept available for furnishing supplies or services in the event of a national emergency, or that the interests either of industrial mobilization in case of such an emergency, or of the national defense in maintaining active engineering, research and development, are otherwise subserved. (This exception is

(Continued on page 346)



Robert C. Kelley, this month's guest editorial writer (see page 87), takes time out to relax between sessions of a recent joint Sales and Engineering Conference of Dressers Industries, Inc., at Mineral Wells, Texas. Shown with him are B. C. O'Brien, Vice President of the Roots-Connersville Blower Corp., Connersville, Ind., and Otto Hammer, Vice President of Security Engineering Co., Whittier, Cal., two of the units of the Dresser organization, which Kelley serves as Director of Purchases.

A POSTWAR survey made for the National Paper Box Manufacturers Association by Moore & Company, industrial analysts and consultants of Philadelphia, establishes the conclusion that product packaging is "right down the purchasing agent's alley", and that more and more companies are turning over this vital factor of their operation to the purchasing department's broad scope of activities. It is noted that a considerable part of the purchasing agent's problem in this field concerns the negotiation of repeat orders and securing conformance to specifications, but that in the field of set-up paper boxes, decorated product packages for display and consumer use, the purchasing department is playing a vital and increasing part in the specification and purchase of new packages.

The survey covered a wide variety of products and industries. Principal uses for the set-up paper box were found in the following fields: boot, shoe and slipper; plants, seeds and nursery stock; drug and chemical; toys, games and novelties; hosiery (rayon, cotton, silk and wool); stationery and greeting cards; office and school supplies: food; textiles; soaps and cosmetics; jewelry and silverware; hardware, small tools and machine parts; department stores and retailers; electrical, radar and radio equipment: shirt, tie, collar and muffler: tobacco; household specialties; knit goods; confectionery; leather goods and novelties; and health equipment.

Among these diverse fields, it was found that a much larger supply of paper boxes for postwar needs would be required in the drug and chemical, office supplies. soap and cosmetics, electrical, and seed industries. The survey also showed that practically every one of the industries is planning to introduce new products, with a consequent need for new packages embodying features of maximum utility, convenience, and merchandising value. Sixteen definitely desired new package designs. Thirteen intended to increase their advertising, and were conscious of the fact that package space is an exceptionally effective advertising medium. New methods of distribution, keener competition, and a general program of product improvement, in practically every case involve new package design.



# THE PURCHASING AGENT'S PART IN PACKAGE DESIGN

Package design is more than a combination of size, shape and strength. The complete effectiveness of the box involves a consideration of utility, convenience, sales appeal, and advertising value

The customary steps in the production of a new package design are outlined in this order:

(1) Need for a new box decided upon by sales research or executive departments.

(2) Analysis of the existing package (if any) and competing packages, by advertising, sales and executive departments.

(3) Tentative preparation of new box specifications by the advertising, research and production departments, frequently with the aid of a box manufacturer.

(4) Conference between advertising, sales and purchasing departments for the purpose of drawing up final specifications.

(5) Submission of layout and designs to box manufacturers for

prices and suggested improvements.

(6) Awarding of contract by purchasing department on the basis of final specifications and design.

It is apparent from this outline of customary procedure that package design is essentially a matter for cooperative consideration and decision, in which the purchasing department plays a vital part, not only in the final steps of procurement but in the earlier stages of development as well, and that the buyer's contribution in the formulation of a practical specification-before the design is fixed and decisions made for actual submission to possible suppliers—is a key factor in arriving at the most satisfactory design. Among the conclusions drawn from the survey and analyde

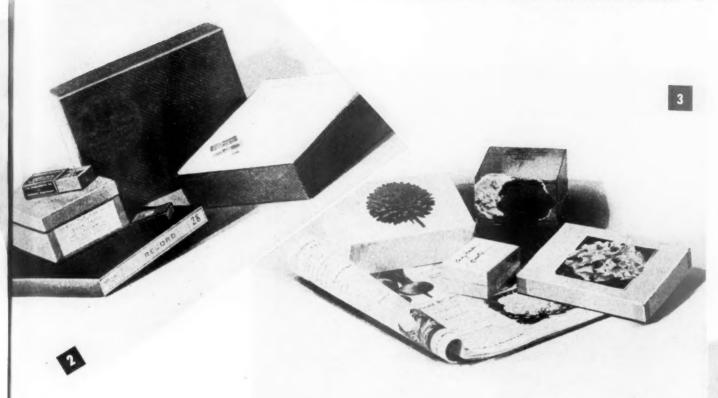
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#### • 5 ELEMENTS OF GOOD PACKAGE DESIGN

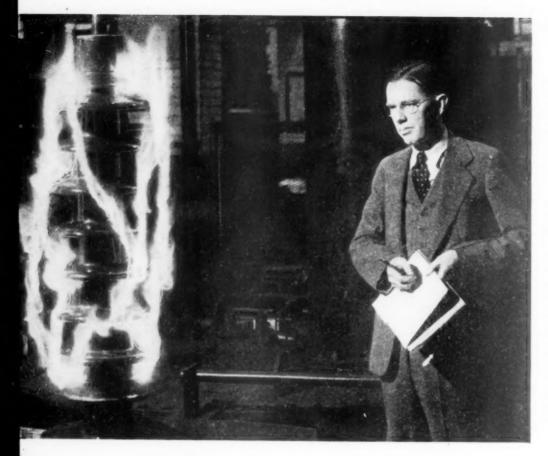


- 1. Quality Appeal
- 2. Unit Storage
- 3. Product Identification
- 4. Convenience
- 5. Utility

sis, in fact, is that the purchasing department is a logical point in the organization at which the package design activities of other departments can be correlated, thereby expediting the several steps leading up to the final design and procurement.

In this connection it is also pointed out that just as the specialized creative ability of the paper box manufacturer is of value to the sales and advertising departments in their approach to the packaging problem, so his specialized technical advice to the purchasing officer can be of value in developing the maximum usefulness and success of the package, as well as keeping the specification in line with efficient manufacturing practice.





HOW PURCHASE ENGINEERS FUNCTION

Regardless of the purchasing agent's own technical qualifications, there is a highly useful role to be served by the specialist trained to analyze problems of materials and production to implement sound buying decisions

By E. L. CADY

PURCHASE engineers are engineers who work for and with purchasing departments. If that definition sounds a bit broad it is because the scope of their functions is broad. There are as many kinds of engineering requirements as there are engineering problems in purchasing. And no two purchasing departments have exactly the same problems.

Purchase engineers, in theory at least, are to be distinguished from

outright buyers or purchasing agents who have had engineering training and experience. The purchase engineer in the "pure state" places no orders, compares no prices, supervises no inventory, works up no contracts. His job is to develop highly pertinent engineering data for the buyers to use, and to act as engineering liaison between the purchasing department and the production, company sales engineering, maintenance and other engineering executives. Of course, his tasks can be made to include

The purchase engineer directs the course of purchase research into profit channels

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some of the standard purchasing functions, or he can be one of the plant engineers assigned to the purchasing department on part time basis; there are no limitations on his working bases.

#### **Technical Production Problems**

One common function of the purchase engineer is to work on new production processes and on the production methods for new products.

Every experienced executive knows that new production lines seldom work exactly the way their engineering blue prints had contemplated, that indeed the plans always leave plenty of kinks to be worked out by "trial" and "development". In the normal course of events, the expected kinks — and some totally unexpected ones — are worked out by the production men and the tool men with the assistance of visiting sales engineers and of any other help that can be found.

The problems are worked out in two stages. The first is the initial or "get it going" stage in which the most vexatious problems are attacked first and are reduced by any workable compromise methods which will get the production into motion. The second is the refinement or "cut the costs and speed the production" stage in which the production is made economical and profitable.

A more or less mild state of hysteria often accompanies the "get it going" stage. Sales engineers may be called in largely because the company engineers know them personally or like their houses and not because they handle the products most likely to solve the problem. After all, in many a case nobody really knows what will solve the problem. Any sales engineer who drops in on any business whatever may be asked about the problem of the moment whether or not it happens to be in the field in which he is most expert. Everything possible to neglect is neglected until the progress-blocking problem is under control.

In the meantime the purchasing department is helping all it can, but it must let the plant engineers run their own jobs and consequently it must concern itself very largely with the matters which the plant men bring to it for attention. These are not always the matters with which it could concern itself with the greatest profit for the company and the

112

quickest solution of the problem at hand.

The first duty of the purchase engineer in this case is to pick out the details on which the purchasing department ought to be working. Perhaps there is little he can do until the plant engineers have found some kind of workable compromise solution, something they can "get by with" until other immediate problems are solved. But once the general method of solving the problem is known, he can instruct his department as to the mechanical devices involved, and the department can proceed with the calling in of vendors, the refinement of selecting materials until the most economical and effective goods have been picked out, and the placing of orders on bases which will secure the necessary speed of deliveries. And in many instances he can set in motion the finding of vendors and their sales engineers who will offer alternative methods of solving the problem.

#### Steering Purchase Research

All of this requires him to work full time with the plant engineers without diverting any of his attention to the standard purchasing business of comparing the offers of vendors and placing orders with them. He thinks like an engineer, not like a buyer.

He runs a projects or "futures" file. In this are complete details of how a complete device such as a belt conveyor is expected to work and how its individual parts such as motors, controls, belt, and bearings, are expected to perform. He knows what the planned maintenance operations and costs are. He has records of the projected rates of output or production of the device and of how these rates were calculated. He knows the expected operating

HOW THE PURCHASE ENGINEER CAN HELP THE PURCHASING AGENT

- By serving as technical consultant on problems of materials, processes, and equipment.
- By assembling production cost data on which sound purchasing decisions can be based.
- 3. By pre-testing the practicability of alternative materials for a given application or purpose.
- By directing the course of purchase research into channels most needed and promising the greatest returns in economy and profit.
- By serving as liaison and coordinating officer with plant production and engineering executives and with technical representatives of suppliers.
- By developing commercially practical and technically sound purchase specifications.
- By analyzing technical and production qualifications of prospective suppliers.
- By aiding suppliers in fullest utilization of material and most economical production methods.
- By working with customers and adapting auxiliary controls bought to the customer's specification.
- By keeping the company up to date and ahead of competition in the adoption of new products and processes.

costs, including labor, supervision and maintenance outage.

In these same files are records of the alternative solutions offered for solving the problem and of the reasons why they were rejected.

Because the purchase engineer has brought the right things to the attention of the purchasing department at the right times, the initial workable compromise solution of the problem is far closer to the secondary or refined stage than would be likely under the normal procedure. And because he is running his projects files and is in instant position to compare what was expected with what actually happens, the purchasing department is in position to take the most intelligent action regarding purchases for maintenance, changes

or redevelopments of the device in question and to speed its share of refining the device to final economy and profitability.

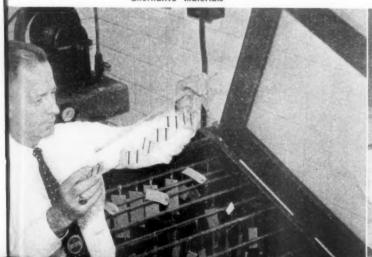
It is common experience that the ultimate development and refinement of a production method may take years, and that the final set up may not even be a reasonable facsimile of the first plan. The work of the purchase engineer has been known to shorten this period by months.

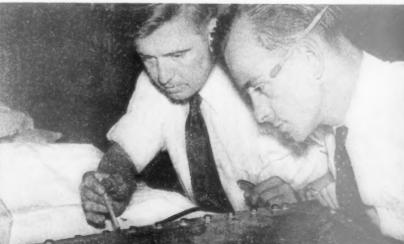
#### **Buying on Facts**

In one large company a purchase engineer spends all his time on determining the adaptability of materials for certain fabricating needs. He is given lists of alternative materials which might be fabricated into a given finished part by given

The purchase engineer pre-tests the practicability of alternative materials

The purchase engineer serves as coordinating officer with plant executives







The purchase engineer serves as technical consultant on materials and processes

methods. For example, he might receive a list of the grades of stainless steel which have sufficient strengths and corrosion resistances to be used in a pump shaft and which may be fabricated in automatic screw machines.

He carries a stop watch. He stands by the screw machines and other production equipment, has test runs made of various steels, asks the foremen to step up the operating speeds until practical limits are reached. He goes from plant to plant and department to department. has one test run here and another there, gets the average results and viewpoints of many foremen and other supervisors. He consults with the toolmakers and with sales engineers of tool materials and of the steels.

Ultimately he comes out with charts of machine speeds, tool costs, tool lives, kinds of cutting oils which should be used. This list, of course, will vary in its factors with the kinds of materials he is observing.

The decisions as to what materials should be bought are not in his hands. They have to be worked out between master mechanics who will decide upon the speeds and methods most economical to use, and the purchasing department which will compare the costs and other purchasing factors of the various grades and kinds and decide upon which ones are most economical to buy. But his work results in enormous savings

as well as in generally increased satisfaction with the grades and kinds of materials in use.

#### A Coordinating Function

A purchase engineer of a foods company is really a "coordinator of local practices". The company has plants in more than half of the states. The problem is to find out what kinds, brands and varieties of production and maintenance equipment and supplies will be suitable and acceptable for the greatest number of plants. By means of the lists which he develops, the purchasing department can increase the size of orders and contracts for duplicate items it places with single vendors and can secure central purchasing advantages accordingly. His job really is to secure for his department the greatest benefits of central purchasing while avoiding all arbitrary and unnecessary trespassing upon the autonomies of local plant managements.

Another foods company has a great many plants of its own but also buys extensively from smaller companies which are its competitors on some items in their own locali-The function of the purchase engineer is to persuade these companies to refine their methods or increase their efficiencies so that his company can either buy more of present products or buy products which they never previously had made.

He carries a brief case full of cost figures, pictures of production equipment, methods, descriptions, marketing data. He tips off equipment makers when a company is thinking of improving its methods so they can add the weight of their sales engineering to his arguments. He is at his busiest and best when his company wants a product that it never before has made or sold.

#### **Auxiliary Equipment**

A maker of production machinery uses its purchase engineers as coordinators between its own customers, the makers of electrical equipment which its customers specify, and its own product design depart-

Modern production equipment, especially of the kinds which his company makes and sells, can be divided into three components: the machine, the power, and the controls. By varying the kinds of motors or other power sources, and even more by varying the kinds of automatic or manual electrical controls, the tasks which the machines can perform can be varied widely.

Selection of the kinds of electrical equipment and to some extent of the mechanical equipment for a given application of a machine, is in the hands of the company sales engineers and of its customers. Sometimes this selection is on a clear engineering basis and sometimes it is guided by whim or even by the desire of the customer to indulge in reciprocal purchasing involving the electrical products made by his customers.

In any case the equipment has to be fitted to the machine. Mounting plates, bolts, studs, power takeoffs, shaft extensions, special insulation or grounds, even changes in the internal gearing of the machine itself to accommodate heavier shock starting loads or other load factors, all have to be arranged. And this design rearrangement is the task of the purchase engineer. He works in liaison with his own sales engineering department, the engineers of the customer, and those of the electrical products makers.

#### **Evaluating Suppliers**

On some occasions the specifications by the customer are so rigid in their naming of specific makes and models of equipment that the company purchasing department has nothing more than a routine task of placing an order and checking an invoice to perform. At other times the customer broadens his specifications enough so that a choice among vendors may be made. Then the purchase engineer acts as liaison between his own purchasing department and that of the customer to work out wide lists of vendors acceptable to both. The company purchasing department makes the final selection of vendors and places the

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Purchase engineers of some of the large automobile manufacturers were among the first in their field. Such staffs have been in existence, under one official title or another, for the past thirty years. But their tasks and techniques could be adopted with profit by thousands of small-

er companies.

They go to plants of prospective vendors of parts and materials needed by their companies. They are expert in judging the efficiency of a production line, the effectiveness of an inspection procedure, the ability of a small company purchasing de-partment. They can recognize those

(Continued on page 348)



A. H. DEKKER
Procurement Manager

PURCHASING for Turco Prod-

ucts, Inc., Los Angeles, manufacturers of specialized industrial

chemical compounds, runs heavily

to a wide variety of chemicals and

the many sizes and designs of con-

tainers for the liquid and dry end

products. Added to these is a great

variety of other materials, equip-

ment and supplies used in manufac-

turing, controls, office work, etc.

There is enough quantity and diver-

sity of procurement to require the

issuance of approximately 500 Pur-

chase Orders monthly, instigated by

and Materials Control and Organic

Research laboratories, Turco is

constantly developing and improv-

ing cleaning and surface processing

compounds for a great diversity of

uses, with more than 150 such items

in production. They are found on

the housewife's shelf for domestic

use; used in shipping, railroad, automotive and aircraft industries

in production and operation; in oil

refineries, dairies, institutions, food

processing plants, municipalities,

and in all types of industrial plants.

Aviation developments and wartime

demands brought forth new light

In large, well-equipped Research

about 150 Purchase Requisitions.

## HOW TURCO BUYS

This efficient purchasing system is based on three basic principles:

- 1. A definite place for each essential item of information.
- 2. Coordination of records and elimination of non-essentials.
- Routing of control data to avoid time lag in processing.



DON W. ECKROAD Purchasing Agent

#### By FRED M. BURT

metals cleaning and processing compounds.

Manufacturing is done in two plants in Los Angeles and in branch plants at Chicago and Houston. There are technical service men and warehouse stocks in principal cities. The Chicago and Houston plants have their own Purchasing Agents, but cooperate with the main Purchasing Department in Los Angeles on combined purchases as indicated, also sending copies of their Purchase Orders to Procurement Manager A. H. ("Al") Dekker at the main office.

Mr. Dekker, while having top responsibility in the company for procurement and allied operations, makes it plain that his Purchasing organization is efficient, competent and reliable to the extent that it is only on the more unusual purchases it becomes necessary or advisable to consult with him before placement of orders. This delegation of responsibility and authority to competent personnel, a pattern followed in all departments of the company, makes for organizational efficiency

and good morale. It gives Mr. Dekker the time for proper coordinating efforts and to do research and development work of importance to production and sales of the company's products.

Don W. Eckroad is Purchasing Agent, assisted by Leona Berger and Ardis Conover, who do most of the buying of stationery and office supplies, and Marguerite Maire, who writes up the Purchase Orders. All three of these assistants have other duties, and it has been a policy to make the entire personnel conversant with the department's operation, and to develop their capacities for doubling on nearly anything that needs doing.

#### Requisitions and Records

Wherever purchase requirements originate, a "Requisition For Supplies" is made out in duplicate, and OK'd by the foreman or other authorized person. The first (pink) copy goes to the Purchasing Department for buying action. The second (yellow) copy is kept in the originating department and is used principally for follow-up. They are kept in permanent file ring-binders in numerical order.



The Purchasing Department is a compact unit, with all records quickly available

A complete purchase record is kept on a 4x6 Kardex system file. A card is maintained for each item purchased with any regularity or volume. The specifications, vendors, and current prices are listed on the face of the card, and a detailed record of individual purchases appears on the back, showing: date, order number, supplier (identified by number), quantity, unit, price, F. O. B. point, weight or amount, net cost, and remarks.

The items are arranged according to various major categories, indicated by guide cards, such as: Miscellaneous Raw Materials; Dyes -Perfumes; Soaps-Waxes; Dry Raw Materials; Liquid Raw Materials; Bottles, Caps, Jars, Jugs; etc. A convenient visual aid is the use of two different colored cards in this file: blue cards denoting materials bought on contract agreements, and yellow cards for those bought on spot purchases.

Supplementing this file, without cluttering up the file with records of unusual and occasional requirements, is a card index with the descriptive title "Where Did We Buy It?" This file contains a record of all purchases of unusual and hardto-find items. Some of these may never be requisitioned again, but in the case of others there may be a pressing need after a lapse of several years, and the record of past action has proved a great time-saver in obviating the necessity of repeating the source-research that went into the original purchase.

supplementary records Other kept in the Purchasing Department in similar card files include a complete list of all association and club memberships held in the company name, and full data on all of the several dozen trade and business publications subscribed to by the company (including PURCHASING).

Standard chemicals, compounds, and some other items are identified by code numbers and are so requisitioned and recorded on the inventory records. A weekly inventory report covering these standard materials is one of the important sources of information on requirements.

The Requisition for Supplies may carry more than one (up to eight) items on a single sheet, calling for the issuance of several purchase orders. After the latter have been made out, the requisitions are filed chronologically in a box file. Every six months, the accumulation of such requisitions is removed, bundled, dated and placed in an inactive permanent file for possible future reference.

#### Ordering Procedure

A substantial proportion of the purchases made locally are initially negotiated and placed by phone, generally by Mr. Eckroad, and then confirmed by a formal purchase order. Similarly, orders on eastern suppliers are frequently placed by wire, with airmail confirmation.

At the time of such telephone purchasing, a mimeographed form headed "Purchase Order Data" is used to record all pertinent details of the agreement. This information includes all the data requisite for making out the purchase order to conform with the agreement and also serves as the primary reference in respect to the order.

The purchase order is a five-part form. The first column, which indicates the department where the order originated, is blacked out on the vendor's copy, and the price column is blocked out on the re-

APR

ceiving copy. The distribution of copies is as follows:

Copy 1 (white) goes to the vendor, and is indicated as either confirming or not confirming a previous agreement.

Copy 2 (yellow) goes to the receiving department, where it is held pending receipt of the merchandise. When the delivery is made, the receiving department checks quantity received against quantity ordered, and returns the purchase order copy directly to the accounting department with a notation regarding any shortage, overage, damage, or substitution, and the amount of any transportation charges paid.

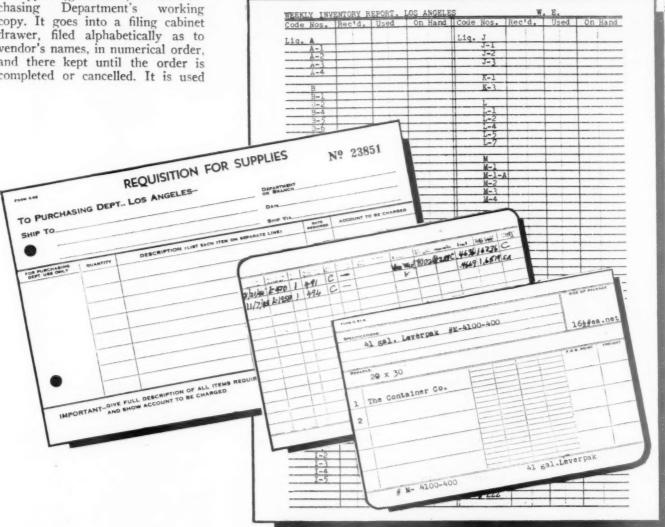
Copy 3 (pink) is a Purchasing Department reference sheet. It is placed in an alphabetical file as to vendors' names, and in numerical order. As noted above, some small item purchases are not entered on the purchase record cards and this copy can be used as reference on these items. They are kept in this file for six months and then moved into a permanent file in a filing cabinet.

Copy 4 (goldenrod) is the Purchasing copy. It goes into a filing cabinet drawer, filed alphabetically as to vendor's names, in numerical order, and there kept until the order is completed or cancelled. It is used for follow-up and to accumulate various items of information such as data on delivery dates, partial deliveries, phone calls made, etc. Before it goes into the permanent file after completion, it may accumulate several other records attached to it-bills of lading, telegrams, invoice copies, receiving reports, copies of inter-office communication forms carrying notifications relating to the order that have been sent to persons concerned, and any other pertinent information, thus making a set of attached papers comprising a complete history of the order.

Copy 5 (white) goes immediately to Accounts Payable and into a vendors' alphabetical file, pending receipt of the invoice and receiving report.

A postal card form is generally attached to the vendor's copy when mailed, to be used for an acknowledgment and to supply pertinent delivery data.

Invoices, requested in triplicate, are received by Accounts Payable. The original invoice copy is attached to the second copy of the Receiving Report (copies two and three go to Accounts Payable) checked against it and the purchase order, and if there are no discrepancies payment is made from these records. If there are any discrepancies they are referred to Purchasing for correction, explanation or other disposal. Sometimes discrepancies proceeding from purchase changes may be anticipated -such as quantity or price change. In this case Purchasing uses an inter-office communication form in triplicate, with the original going to Receiving as notification of quantity changes, copy two filed with Purchasing Department purchase order working copy, and copy three to Accounts Payable. Only two copies





Stockkeeping of advertising and instructional literature is highly systematized

COPY DISTRIBUTION POR PURCHASE  ORIGINAL INTESTIGET COPY. L. A. DUNICACE   PURCHASE  ORIGINAL INTESTIGET COPY. L. A. OUSDOUTH CATE FILE  ORIGINAL INTESTIGET COPY.  OUSDOUTH COPY. L. A. OUSDOUTH COPY. TILE  OUSDOUTH CATE FILE  OUSDOUTH CATE		RECEIVING REPORT  RECEIVED FROM  ADDRESS  DELIVERED BY  CAR NO. FREIGHT BILL NO.					PURCHASI	PURCHASE ORDER NO.  DELIVERY CHARGES PREFAIG COLLECT (CHECA) (SHOW ANOUNT)	
							PREPAID		
_	QUANTITY	INIT OR ART NO.	DESCRIPTION O	MATERIAL	NET WEIGHT OR NET GALLONS	NÜMBER	REMARY		
HECKED BY		DA	YE RECEIVED	RECEIVED	BY		No. 57	7542	
IMPOI	RTANT: P	cryment of invoice.	ee and inventory record Report must be made up	s are made from this o immediately and ma	report. IT MUST BE	ACCURATE			

are used with a price change, as none goes to Receiving.

The four-copy receiving report, made out in the Receiving Department, is handled as follows: Copy 1 to Sam Steinbrecker in charge of Inventory (Stores), to Stationery

Stockroom, Small Parts Stockroom, or any other point for which the shipment is destined. Copies 2 and 3 to Accounts Payable. The extra copies of the invoice are there attached to it and then sent to Purchasing where they join the working copy of the purchase order, after which this accumulated data is used for posting on the proper purchase record cards. The third copy of the invoice may be sent to the department originating the requisition if they have need for this cost record.

it reh tit gd a fe gth col

Copy 4 of the receiving report is kept in the Receiving Department vendors' alphabetical file.

Special quotation information requested and received is recorded on the "Quotation" form and placed in "Quotation" special file. Important price changes are recorded, with reasons for change, old and new price, dates effective, source of information, remarks, etc. with copies to any of the following who may be concerned-President S. G. Thornbury, Vice President Ray Sanders, Procurement Manager A. H. Dekker, Inventory Desk and Purchasing Department. The "Notice of Price Change" form is used.

When the Shipping Department the form Purc ceipt adju dor,

Ship

T and form ing and mair all c item repo hane tripl the give do t after for goes the cop Dep

the Rec a lo

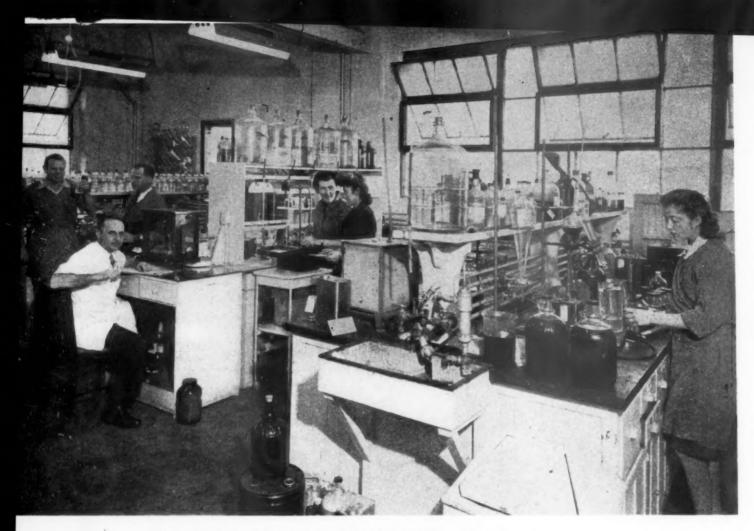
record of orders placed, forms received and issued, storage location, and maximum and minimum stocks, is of much assistance in determining when, and how many, to order from time to time. The Printing Authorization instigates the printing, but the formal purchase order is not issued until the notification of completion of printing is received.

#### Inventory Control Methods

The Inventory Department maintains a complete perpetual inventory

of all materials and supplies on hand for production and of completed products. There is an inventory control sheet for each item. One file is maintained for raw materials and another for finished products. Receipts of raw materials, etc., are entered from the receiving report with its number placed in the "Reference" column. Withdrawals are noted under "Out" with the balance "On Hand". Cost records are extended to give the value of the stock on hand, at each month end. Other

PURCHASE ORDER  TO:  PURCHASE ORDER  No. L 38  The Russer Meet Street St	36 are so All In- repetating to
Ship Via P.O.B. Terms:  — Confirming: Not Confirming: Tazable: Resale: (Permit X-5355,  Pitase Furnish Subject to the Following Conditions:  1. Render Involtes in Triplicate to Above Address.  2. Billis of Lading, Involces, Pecking List, and Delivery Receipts Shall Refer to This Order Number Only and Be Malles  2. We Shall Not Be Responsible for Charges Which Are Not Authorized By Our Signed Order.  4. Changes Are Not To Be Made in Quantities or Type of Merchandiss Specified on This Order Without Written As  QUANTITY DESCRIPTION OF MATERIAL	
PURCHASE ORDER DATA  U.o. of Extra Copies  Vendor	
Deliver Fick Up	
F.O.B. Terms Taxable Ressle Confirming Not Confirming Pating Certification Res'n No. For Ouant. Description Code Price Unit	
The above instructions, together with the terms and conditions on the reverse at this Purchase Order are made a part hereto, to  By:	
Title:	
References Purchase Order	
	To:    Ship Vis



Well equipped laboratories provide constant product development and quality control.

entries are made from the production order and material transfer forms. These production order forms carry a complete record of materials and containers used. Entries are made weekly from a re-cap sheet on which entries are made from daily production reports. Production reports go directly to Inventory Control at the end of the day. The material transfer form is used to note such items as the transfer of a product from a large container into several smaller ones, and then for inventory record corrections.

#### Weekly Report

The weekly inventory report keeps a close record of coded items as to receipts, usages, and quantities on hand. This form and the daily shipping report form are used to keep the Inventory Control sheets up-to-date. The latter are made out in duplicate with the original re-tained in the Inventory Department for possible quick future reference, if any question might be raised as to whether any specific shipment ordered has actually been made. The duplicate copy goes to a clerk in Accounts Payable who checks it against all freight bills covering outgoing shipments.

Turco has several warehouse storage points in the Los Angeles in-

dustrial area, with their perpetual inventory records kept in the Inventory Department at the main plant. When any stock is moved from one location to another, the appropriate entry is made at the point of origin, showing the description of items transferred, and the original and new locations. Copy 2 is kept at the point of origin and copy 1 goes with the delivery to be receipted by the receiver. It then goes to Inventory Control to be posted in the perpetual inventory records for both points.

The Purchasing Department uses a very efficient and space-saving system of maintaining an up-to-date catalog file. While a few bulky catalogs are kept in alphabetical order (as to company name) in a bookcase, a very large number are kept in filing cabinet drawers in numerical order according to the "Catalog File Code List" typed out on 8½ x 11" sheets. There is a file folder for each category or code number, and this number is marked with a crayon on each catalog so that it be-

Item and Descri	ption	
From		
Date and Refere	nce	
Price and Roman	ks	

comes a simple matter to re-file it in the proper place. Following are excerpts from the Catalog File Code List-

100-Automotive Equipment

A Parts B Tires

C Trucks and Passenger Cars

110-Badges and Identification Cards

120-Brushes

140-Building Materials

A Aggregates

B Cement

C Lumber D Refractories

E Repairs and Services

160-Bulletin Boards

220—Chemicals

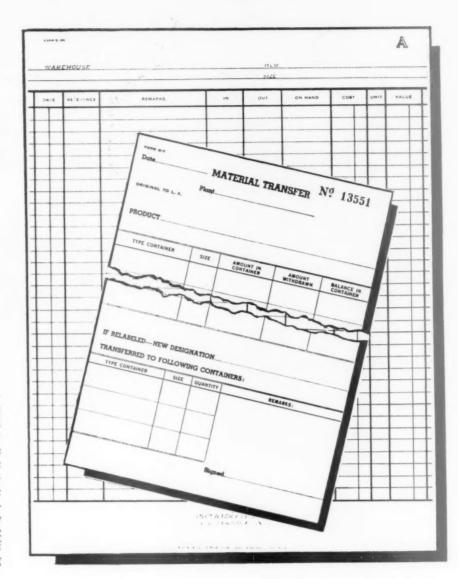
A Abrasives

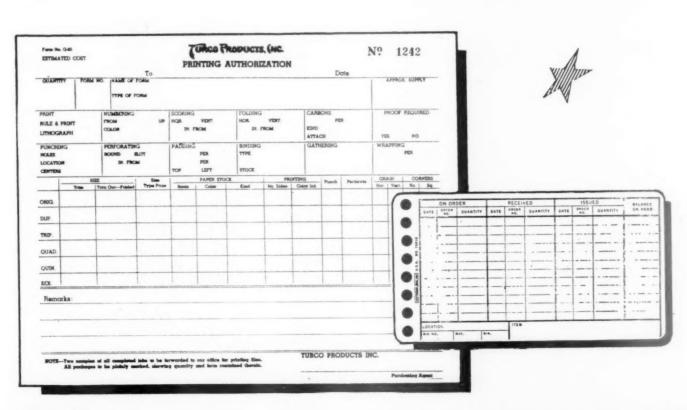
B Acids

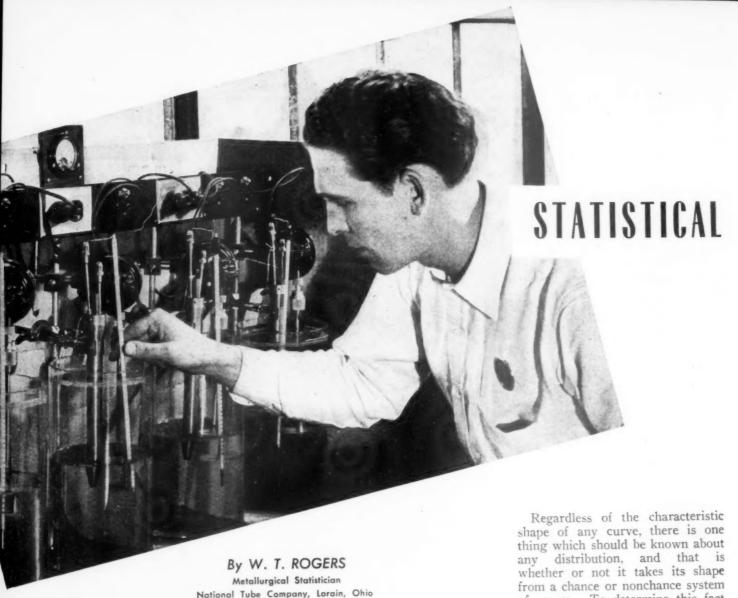
etc.

520—Hardware

One of the most pointed and important statements that can be made about this Turco procurement and stores system is that there is a very convenient and well designated place for every pertinent and desirable record, yet there are no non-essentials. Operations are such that there is no time lag in making and handling records—the delays that allow work to pile up to the extent that there is a much greater likelihood of errors, omissions, and the mislaving of records.







N the past twenty years, industry in general and the steels plants in particular have been gradually adopting statistical methods as a practical means of obtaining quality and production control. With the advent of the war in 1939 and the rapidly increasing demand for more and more good product in the shortest possible time, engineers have been increasingly anxious to use every means at their disposal not only to produce more but to obtain an increasingly larger percentage of good product. This increase in the proportion of good product can be obtained only by maintaining a high and consistent level of quality in all related operations, and it is not surprising to persons well versed in the technique of quality control by statistical methods to find that their services are now in great demand. The statistician dealing with quality control in a manufacturing plant of practically any description finds, almost before he

Paper presented before the annual meeting of the American Society for Metals, Cleveland, February 4, 1946

can realize the fact, that he has changed from the status of statistician to that of quality control engineer.

The scope of the material presented in this paper includes a comparison of two common methods of presenting data together with certain representative practical applications which, it is believed, will furnish a clear and concise picture of the use of statistical methods in connection with a quality control program.

#### Frequency Distributions

In any industry producing material by repetitive processes, constancy of the factors involved is not obtained. The numerous variables associated with quality and production occur with more or less mathematical regularity about any one desired value. Generally, the desired value is the most frequently encountered, with values on either side occurring with less and less frequency between certain limits which can, in most cases, be determined by statistical methods.

from a chance or nonchance system of causes. To determine this fact correctly is one of the important tasks of the quality control statistician

Chance causes may differ from time to time so that a distribution of any one variable will have a different form in one period than in another. As time progresses, an element may periodically enter and leave the system. A factor may appear in different magnitude from time to time, depending upon previous processes, or a completely new factor may enter or an old established factor leave the system. Regardless of these situations, one thing is constant whether statistical control is practiced or not, and that is, that in every manufacturing process the manufacturer aims for a definite mark in controlling all of his processing variables to the end that the most satisfactory product may be made with the greatest economy.

Knowing the chance system of causes from which a distribution arises, it is possible by statistical tests to arrive at a conclusion as to whether or not a group of observations can be regarded as having originated from the known system.

### METHODS of QUALITY CONTROL

The quality control engineer's job is to assure quality in production; the buyer's responsibility is to procure quality in purchased products. An effective program of quality control thus becomes a strong factor in determining good supply sources

The one question which must be answered is, "Do these data come from a constant system of chance causes?"

#### Material Not Conforming to Standard Service Requirements

There are many cases in industry where it is necessary to evaluate a condition by the method of attributes instead of variables. In other words, instead of evaluating a condition numerically, it must be measured by a certain characteristic to which it either does or does not conform.

An example of this type is the performance of nozzle assembly on an open-hearth pouring ladle. In order to facilitate the pouring operation it is necessary to have a nozzle assembly which will operate smoothly and give a good shut-off from ingot to ingot, and inasmuch as the evaluation of this condition depends on the judgment of the operator, it is evident that it can only be recorded as satisfactory or unsatisfactory. A frequency distribution of the daily percentage of nozzle assemblies giving unsatisfactory results is the familiar fraction defective curve found in practically all cases where conditions are considered as conforming or nonconforming.

Even though statistical tests bear out the inference of visual inspection and considered judgment, one can only arrive at the conclusion that it is quite probable that a given set of data did or did not come from a controlled system of chance causes. Furthermore, it cannot be determined from a frequency distribution whether more than one level of control is included in the data, nor can the existence of trends be detected. One is therefore forced to the conclusion that frequency distributions are not suited to the routine analysis of observed data in a manufacturing process.

If one wishes to know the whole story relative to the chance or nonchance occurrence of observed values, the control chart is of inestimable value, in that it tells:

- The state of statistical control.
   The evidence of more than one
- level of control.
  3. The existence of nonchance
- causes.
- 4. The existence of cycles or trends.

It is often necessary, in an industrial process, to evaluate the results obtained by changing a process in order to determine whether an additional change will give a more uniform product. A common method of making such comparisons is the frequency distribution from which an opinion is formulated on the basis of congruity of two curves. Where chance factors of variation are numerous and non-chance conditions likely to arise, the control chart is

more desirable than the frequency distribution. It is believed that, in general, this conclusion will hold true in this type of analysis.

Control of a production process consists essentially in determining immediately the degree of success being attained and a system of repeating this determination from time to time as a matter of routine. There are, however, certain processes where the actual measure of effectiveness is not only time-consuming, but in addition may be so destructive of material that repeated measurements at short intervals are economically undesirable. An instance of this kind is the metallic coating of steel pipe by the hot dip galvanizing process.

#### Simple Correlation

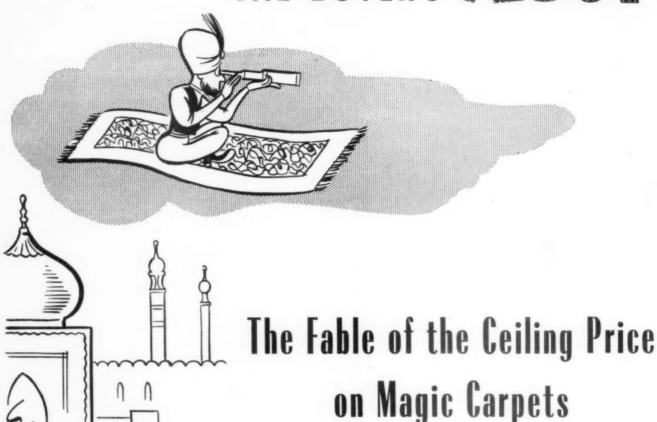
In cases of this kind, it is generally much more desirable to have a method which will give rapidly. without the destruction of finished product, a measure which indicates a certain value that is highly correlated to the variable under consider-There are instruments now available which give quickly, and without destructive testing, numerical values which are highly correlated to the actual coating weight. It is necessary only to obtain a suitable instrument and to develop the relationship between the values obtained by its use and the actual coating weights obtained by more precise methods.

Another type of problem frequently encountered in industry is one in which the end result of a process must be determined in one of the preliminary stages of manufacture. A good example of this is the chemical analysis of steel. The steel manufacturer must accept steel based on the analysis of the metal in the as-cast condition (ladle analysis). The ladle analysis which is taken directly from the molten steel represents the greatest degree of homogeneity in chemical constituents that is possible to obtain, while the check analysis, due to the physical characteristics of the solidification process, is subject to considerable variation. In view of this condition, it is necessary for the metallurgist, charged with the responsibility of accepting material to meet certain specifications, to know something about the relation between the ladle analysis and check analysis.

Thus it can be seen that by setting up statistical relationships based on reliable past experience, statistical

Continued on page 340

## THE BUYER'S ÆSOP



#### By IRMA FUEHR

Long years ago there lived in the city of Bagdad a caliph who was the Caliph of Bagdad. The caliph had a beautiful daughter named Fatima and a royal chief of purchasing agents named Pash.

One day the Caliph called in Pash and stormed at him in a true caliphian typhoon. "Tomorrow my daughter celebrates her fifteenth birthday! Have you procured a magic carpet for her? No! Do you want her to die an old maid? Who but a beggar would wed a maid lacking a magic carpet? What kind of purchasing department do you think you're running anyhow?"

Pash bowed very low. "It shall be procured immediately, your most majestic caliphry. Before another sun rises, Fatima shall have a magic carpet. And that's for sure!"

"Nothing reconditioned," warned the Caliph. "It must be a genuine, new magic carpet. Prewar quality. And don't go over five bucks. I got taken last night in a game of gin rummy." "Sure, sure, sure," said Pash suavely, and bowed away to his office.

But his elaborate visible files showed no magic carpets in stock. Worried, he recalled that no magic carpet salesman had been around for months.

"Write out a purchase order for a magic carpet," he barked at his secretary. "Heavy duty. Five by seven. For immediate delivery, if not sooner. And send it through the proper channels. I'm off on caliphian business."

Out at the hangar he climbed on the company's magic carpet. It was second-hand, with worn spots in the middle, where Pash's posterior had rubbed the nap quite thin, and the edges were frayed from combating the prevailing westerlies and the rough edges of cirrus clouds. But this was no time for repairs.

"Abra-cadabra. Umbriago. Hey, nonny-nonny. Hubba-hubba. Roger," said Pash. The carpet obediently taxied to the end of the port and flew off into the blue horizon.

All day long Pash flew, poking

his field glasses through a hole in the carpet, searching the landscape for the smoke of a magic carpet factory. But no luck. At dusk, cruising low, he sighted the city of Ankara.

"Son of Bagdad," he thought.
"This batting around in the dark isn't getting me anywhere. I'll land here and hunt me up a genie salesman and buy him some drinks and maybe—"

After a four-point landing he scurried off to the nearest tavern, leaned up against the bar, ordered a double Omar Khayyam to put him in condition and gandered around alertly. Sure enough! In a plywood booth, drinking a dry Rubaiyat sat the genie salesman for Magic Carpets, Inc. Pash moved in and plied him with drinks and cigars and his best jokes. But the genie only drank glumly and chain smoked Pash's tobacco. Finally the genie shook back his light brown hair. "I know what you're after," he shot at Pash. "You're after a new magic carpet. Let me tell you, chum. There ain't

Continued on page 342

A CARTEL when participated in or operated by private industry, is currently undergoing an accretion of disrepute as a result of reiterated accusations of wickedness or unintelligent connotation.

It has been labeled an unholy and vicious instrumentality, allegedly designed to gnaw at the roots of free enterprise and the competitive system in a peace-time economy, and has been anathematized as a calculated scheme which has seriously impeded or partially frustrated our

full mobilization for war.

The cartel appears to have become a political symbol. The castigation of it seems to have acquired a peculiar heroism, and has popularized its denouncers as champions of the virtuous and worthy little, versus the wicked and unworthy big. It has been the handy subject of apt cartoonists, assured of a popular response, in depicting it as the machination of an arrogant, opulent plutocrat oppressing a downtrodden but defiant little business

However, a cartel, by any other name, when participated in or operated by the Government, has accrued to itself a sanctity and usefulness, which make it difficult to reconcile the vociferous attacks upon it under other auspices. One is tempted to apply the scholastic adage, that whenever a contradiction is met, a decision must be made.

#### What Are Cartels?

A search for an informative and satisfactory definition of a cartel through the extensive literature which has developed around it is a discouraging, almost a futile pursuit; one emerges as from a wearisome jungle-hunt without game or profit. There are economic and legal definitions so utterly inconsistent as to be meaningless. The academic description of a cartel as a system, technique, device, or practice, mutually agreed upon by members of it. to establish prices, and regulate competition in the production and distribution of goods, materials or services, may be sufficient for application in domestic dealings, but it is useless in international operations. Even in a domestic application, such a definition presents staggering difficulties. For example, in the United States, the Webb Act alone permits associations and agreements which the Sherman Act would prohibit and prosecute.

If a cartel, when operated by private industry, warrants the fervid

## The Case for Cartels

The cartel type of organization is an economic fact in world trade, and America must face it realistically

Slogans, emotionalism, and immature ideologies put us at a disadvantage

#### By GREY LESLIE

condemnation to which it is being currently subjected, it is difficult to understand why governmental restrictive practices, including tariffs, most-favored-nation clauses, sterling areas, Ottawa Treaties, International Wheat, Cotton, Rubber, Oil and similar commodity agreements, attract no such scathing judgment. Nor could labor unions nor the entire philosophy of collective bargaining go completely unquestioned. We are confronted by the anomaly of private industry cartels being consigned to the bottomless pit, whilst governmental cartels, by any other name, occupy the seats of the chosen and the elect. Yet the private industry cartel and the governmental commodity agreement, which is a cartel by another name, have a functional identity.

In the international field, American terminology and attitude toward cartels differ from those of Great Britain, as those of Great Britain differ from France, as France differs from Belgium and Luxemburg, as Sweden from Germany, and as each differs from the other.

#### Importance of World Trade

In the absence of reliable statistics, it is impossible to say how much of world trade is controlled by various cartels. Again the national differences in terminology and definition would make any figure incon-clusive. It is realistic to believe, however, that as much as one half of the future world trade will be dominated from now on by cartel mechanisms, under any other name, whether we have a workable defini-

One must consider the enormous repercussion of cartel operation on international policy, particularly in those wide areas where the Soviet ideology is prevelant and in force, and in other countries where "nationalization", "socialization", stateowned or state-dominated industry and services are political policies. Here political and economic motives merge and become inseparable.

The United States is alone in its puerile fear of cartels. The idea that cartels operate always against the public or consumers' interest has been and is currently promoted by some political opportunists who seek either to expand their bureaucracy by withering government controls of international trading, or to attract transient acclaim as fervent champions of Free Enterprise and Small Business or whatever shibboleth is expedient or popular. Such fatuous opposition to the cartel had a popular appeal here when foreign trade represented such a relative trifle in the national income and when the United States was contented to be a more or less detached observer in international trade. It loses whatever force it might have had, when realistic business men are obliged to recognize the weight international trade now holds for us in the changed position of this country in the post war era.

#### Rules of the Game

The United States cannot longer afford to play a lone hand. A reconciliation of our present cumbrous, indefinite and often contradictory laws and regulations, with those of foreign nations affecting cartels, demands prompt attention. Our entire negative and ineffective policy against cartilization requires the clear sunlight of the best thought of our industrial leaders to bring it out of its present Stygian depths.

Regardless of any emotional or theoretical predilection, the cartel is a stubborn compelling fact, currently existing and operating under the laws of many foreign countries. In fronting into our proper, earned, and necessary position in world trade, we shall be obliged to do business under those laws or to practically retire from the international trade field altogether. Not a comforting prospect in the light of our need for expanding markets to sustain full

It is extremely doubtful whether American business can afford to remain on the sidelines in the present international maneuvering for position. We have small appetite for a melee of that sort and have extremely limited practice in it, but we can no longer pose as either shocked or amused spectators. Our entrance as an active participant may introduce some sense of order in the business, formulate some rules of the game and elevate it to its proper position of competitive challenge. We shall have to feel off the buttons on the fencing foils we have been urged to use and make every thrust count. There can still be some sportsmanship in that!

#### Out of Chaos

The cartel movement derives an added impetus from its new environment in the present economic chaos of Europe and the Far East.

The emphatic separation of Germany and Japan from the economic life of Europe and the Far East will focus attention and effort to the readiest and most efficient mechanism at hand to implement that separation, and to meet the tremendous demands for goods and services formerly supplied by those coun-

It is specious to charge a cartel operation with an acute antagonism or a serious challenge to small business because, in industries where human skill is the chief factor, a cartel offers no real advantages. Such industries are usually conducted on a small scale, require comparatively little capital and are limited in their possibilities of overproduction. Cartels are fundamentally operative in mass production, large aggregations of capital, extensive operations and in countries with an extreme dependence on foreign trade.

In reality the cartel is the twentieth century industrial counterpart of the old guilds, and parallels the progress of modern industry. In Great Britain, the great exponent and examplar of free trade, many British trade organizations have definite price - fixing functions and joint-selling agencies with allocation of output on a quota basis. The sewing-thread combine with its extensive, almost global, ramifications is typical and too well known to require detailed description here.

H. A. Marguand, Secretary to the British Department of Overseas Trade, addressing the British Institute of Exports, explained recently that the Government will "guide" exports of machinery and capital goods to those foreign countries from which she is a purchaser, and that the Government will encourage manufacturers in Great Britain to set up industry-wide selling offices and to market their products through such organizations.

#### World Opinion

It is strange to note that many American advocates of "planned" or "managed" national economies are so vociferously antagonistic to private industry initiative in these directions. The attitude of foreign countries toward the cartel has been consistant for a decade and more. At the World Economic Conference at Geneva, 1927, Great Britain, with Germany, opposed any formulation of an international body for the control or supervision of cartels. The French favored a positive endorsement of the cartel principle. The text of the resolution of that Conference merits examination:

"The conference has examined with the keenest interest the question of industrial agreements. which have recently considerably developed and have attracted close attention from those sections of the community whose interests are affected by them and from the public opinion of the various countries.

"The discussion has revealed a certain conflict of views and has occasioned reservations on the part of the representatives of different interests and countries. In these circumstances, the conference has recognized that the phenomenon of such agreements, arising from economic necessities, does not constitute a matter upon which any conclusion of principle need be reached. but a development which has to be recognized and which, from this

#### CARTELS OPERATE

DIAMONDS







practical point of view, must be considered as good or bad according to the spirit which rules the constitution and the operation of the agreements, and in particular according the measure in which those directing them are actuated by a sense of the

general interest.

"The conference considers that the field of operation for agreements, both national and international, is usually limited to branches of production which are already centralized and to products supplied in bulk or in recognized grades, and that, consequently, they can not be regarded as a form of organization which could itself alone remove the causes of the troubles from which the economic life of the world and particularly of Europe is suffering

ing.

"Nevertheless, in certain branches of production they can—subject to certain conditions and reservations—on the one hand, secure a more methodical organization of production and a reduction in costs by means of a better utilization of existing equipment, the development of more suitable lines of new plant, and a more rational grouping of undertakings, and, on the other hand, act as a check on uneconomic competition and reduce the evils resulting from fluctuations in industrial

activity.

"By this means they may assure to the workers greater stability of employment and at the same time, by reducing production and distribution costs and consequently selling prices, bring advantage to the consumer. It is generally recognized that in this way agreements may in some cases be useful not only to producers but also to consumers and the community in general.

"Nevertheless, the conference considers, on the other hand, that such agreements, if they encourage monopolistic tendencies and the application of unsound business methods, may check technical progress in production and involve dangers to the legitimate interests of important sections of society and of particular countries.

#### The Public Interest

"It consequently appears to the conference that it is entirely necessary that agreements should not lead to an artificial rise in prices, which would injure consumers, and that they should give due consideration to the interests of the workers. It is further necessary that they should not, either in intention or effect, restrict the supply to any particular country of raw materials or basic products, or without just cause create unequal conditions between the finishing industries of the consuming and producing countries or other countries situated in the same conditions. Nor must they have for their object or effect any reduction of the economic equipment which any nation considers indispensable, nor should they stereotype the present position of production, whether from the point of view of technical progress or of the distribution of industries among the various countries in accordance with the necessities imposed upon each by its economic development and the growth of its population.

"The conference considered the question whether there was ground

for establishing a special judicial regime and a system of supervision over agreements.

"The documentation resulting from the labors of the preparatory committee shows that specific legislative or administrative measures in this direction have been taken by a limited number of countries only and that the measures adopted are widely divergent both in conception and form.

"The conference recognized that, so far as regards agreements limited to the producers of a single country, it is for each Government to adopt such measures in regard to their operation as it may think advisable. It agreed, however, that it is not desirable that national legislation should place an obstacle to the attainment of the benefits which agreements might secure by exhibiting a prejudice against them as such.

"So far as regards international agreements, it is generally recognized that the establishment of an international juridicial regime is impossible in view of the divergencies between the measures which various countries have considered it necessary to take in the matter and on account of the objections of principle which a number of States would feel on national and constitutional grounds to any such system. It has, however, been pointed out that the laws and regulations and tribunals of each country have jurisdiction not only over national agreements but also over international agreements in so far as they involve operations within the national territory.

"On the other hand, it is desirable that voluntary recourse by parties to

#### IN MANY FIELDS

COFFEE



STEEL



agreements to arbitral bodies should become general, subject to guarantees of the high competence of the latter in economic matters and their sense of the general interest.

"From a more general standpoint the conference considers that the League of Nations should closely follow these forms of International industrial cooperation and their effects upon technical progress, the development of production, conditions of labor, the situation as regards supplies, and the movement of prices, seeking in this connection the collaboration of the various Governments. It should collect the relevant data with a view to publishing from time to time such information as may be of general interest. The conference is of the opinion that the publicity given in regard to the nature and operations of agreements constitutes one of the most effective means, on the one hand, of securing the support of public opinion to agreements which conduct to the general interest and, on the other hand, of preventing the growth of abuses.'

(The italics in the quotation are the author's, to stress significant portions of the original text).

#### Amateur and Professional

Our own Government made some stumbling amateurish attempts at domestic cartellization in the National Recovery Act, in the Bituminous Coal Act, and several others; but these efforts to meet the acute problems of a depression which brought about plummetting prices, cut-throat competition and starvation-wage levels, died from their ineptitude.

No one will deny that some Government sanctions and supervision of cartels are desirable and would be welcome, but control in the only sense that bureaucrats are accustomed to apply it nowadays, will deny to American business the aggressive leadership in this field of International Trade of which it is eminently capable. An extract from W. H. Beveridge's "Full Employment in a Free Society" reads:

ment in a Free Society" reads: ... A problem arises from the fact that the course of international trade in a number of articles is now determined or influenced by international cartel agreements. Such cartels may serve a good purpose in stabilizing trade and production. The whole trend of the argument of this Part of the Report is towards a management of international trade. in place of leaving it to unregulated competition. That is to say, it is towards that for which the cartels stand. To attempt to destroy or stop cartellization would therefore be a contradiction of policy. But is equally essential that, whatever policy in regard to international trade is adopted by the Government of Britain, that policy should not be liable

to defeat or deflexion by the extragovernmental decisions of cartels. The latter should act in accord with national policy and as agents of that policy, not in disregard of that pol-The first step in securing this is full information as to the operation of cartels. But this is a first step only. It will not be sufficient for the formal arrangements of cartels to be recorded and supervised while substantive policy is determined by 'gentlemen's agreements' which do not get recorded. It will not be sufficient to have scrutiny on behalf of the Government exercised by Civil Servants of no technical knowledge. What is wanted is that those who have the responsibility of conducting great and highly organized industries should come to regard themselves as the agents of a wider policy than that of their busimi

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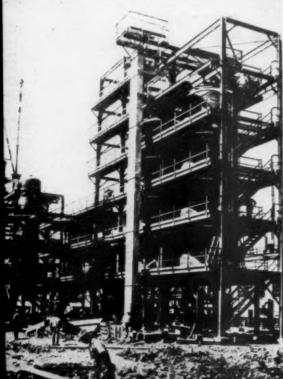
"Just under what forms and by what institutions this can best be accomplished can probably be learned only by experience."

That seems to strike a familiar chord. The idea is not novel that "Those who have the responsibilities of conducting great and highly organized industries should come to regard themselves as agents of a wider policy" but a certain strata of politicians and so-called economists in this country will be reluctant to discard their ready condemnation of cartels and will continue to maxi-

#### CARTELS OPERATE

RUBBER







mize the popular appeal of overt distrust and suspicion of great and highly organized industries to large segments of voters.

#### Popular Fallacies

The notion persists, and in some quarters is devoutly encouraged, that cartels reached the highest point of efficiency in Germany, primarily for military reasons. Even a cursory examination of cartel development in that and other countries turns up contrary evidence. It is true that the Nazi Party, sensing the ready utility of some large industrialists, turned their international cartel arrangements into international economic and financial manipulations for vicious purposes. To condemn all cartels because of exceptional or occasional misuse would be as sensible as forbidding the sale of hatchets because they are occasionally used as weapons of violence.

Recently, a Washington public official, in a statement on this subject, said in effect that a cartel was an attempt to put each industry into a strait jacket. Actually, instead of a straight jacket, a cartel defines an area of industrial activity, usually wide and large enough to utilize to the maximum, the efficiency, capacity, finances, facilities and organization of each member. It encourages concentration of effort and attention to the potential of each participant.

The amazing results of this coun-

try's full mobilization for war production is conclusive proof of the efficiency of concentration. Those portions of the British Essential Works Orders which frankly and openly insisted on concentration of industries offer added evidence if it is needed.

In the same statement it was stated that France, Germany and other European countries which became the greatest exponents of cartels also directed legislation against them. On the contrary, these countries, including Great Britain and especially Germany, recognized the economic advantages of cartels and enacted legislation to foster and encourage them.

#### The Realistic Approach

The fact that a cartel can be, and frequently has been, an instrumentality of stabilizing prices, is an inconvenient and sometimes a particularly disturbing fact to those politicians and economists who have found conforting popularity in exploiting the anti-monopoly tradition of the people of the United States in domestic affairs.

It is disturbing to them to discover the cartel as a positive, active and tangible corollary of price stabilization. Stripped of all extraneous verbiage, stabilization of prices in any economic scene means simply the discouragement of cut-throat competition, frequently engendered

by sheer panic, or inefficient, uneconomic production, or disorderly operation; and replacing them by orderly, efficient and profitable produc-

tion and marketing.

The realistic demands for full employment require maximum production; maximum production implies substantial capitalization, huge plants, laboratories and scientific staff, constantly expanding domestic and world-wide markets. The constant, certain imperative of all these is stabilization—and cartels, by that or any other name, can be made to be adjutant to stabilization.

American industry of the Twenti-eth Century cannot be trammelled by the fallacious or theoretical eco-

nomics of the Nineteenth.

In this immediate post-war period particularly, presenting as it does unprecedented problems to all producing and exporting nations, a clear, dispassionate, unemotional and intelligent understanding of the cartel is imperative. In any forthright appraisal of its function, it must be extricated from the emotional contexts with which it has been shrouded, regardless of their origin or purpose. It must be examined as an economic mechanism which was developed from a complexity of accumulated political, social and economic forces in world-wide trade.

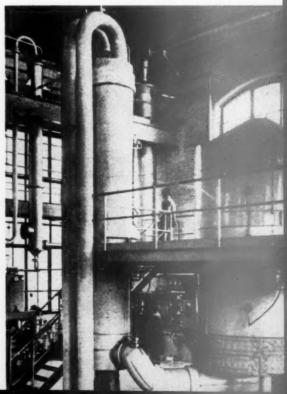
The global, economic, political, and social implications of cartel arrangements impinge upon our

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American domestic economy so forcibly, that it is stupid to urge American business to indulge and to find what comfort it can in sanctimonious gesturing, or to be satisfied with anything less than a clarifying definition, as far as that is practical, so that it may know what rules to formulate, and be able to insist upon their general observance. Such a definition and such rules cannot be so limited in their compass to exclude any proper mechanism of proven social and economic usefulness. Such a definition must frankly face the vast differences which exist between domestic and world practices or systems; and recognize the impracticability of attempting to fit, as in a neat ready-made garment, those domestic laws, regulations or controls which may be useful or perhaps desirable in a domestic economy but which would be misfits and inadequate in international dealings.

Such a definition must courageously acknowledge the easy transition from the purely private industry level to the foreign policy level with its far-reaching implications.

A Government cartel under another name becomes "A Trade

Agreement" and thereby is expected to be identified as something sacred — the pledge word of nations — or something equally sanctified and commanding veneration.

But does it merit such veneration?

#### The Soviet Technique

Let us examine, as far as we are permitted, the text of an "Economic Agreement between the Soviet and Rumanian Governments". It stipulates the formation of Soviet-Rumanian syndicates for the full exploitation and development of the entire resources of the latter country. Scrutinizing it as closely as we are allowed, it reveals a positive effective monopoly, excluding all other foreign interests. A Russo-Rumanian agricultural syndicate is to control farm production. Rumanian partner offers the land, the labor and the seed. The Russian partner supplies the tractors (which, incidentally were Rumanian property before the country's liberation, but which were demanded by Russia as reparations). Rumanian farmers may now use them under the supervision of the syndicate. The produce resulting will be the property of the syndicate and marketed by it.

The commercial part of the agreement calls for Russian capital and technicians and a fifty-fifty deal is accomplished by Russia taking 50% of the stock held, either by the Government or private individuals, or by the government in oilfields, mines or industrial concerns. The Russians now return as their own contribution, the machines and oil operating equipment which they removed during the Russian occupation.

No matter that some of the equipment was the property of the Germans—that is recognized as a war prize—but some of it was the property of American, French, Belgian, and British oil companies operating under concessions in Rumania for five decades or more. No matter! It is now Russia's share in the deal.

Naturally the syndicate will require operating "Officials". These must be either Russian or Russian sympathizers.

Similar syndicates operate waterways and all banks on the same fifty-fifty basis. Countries other than Russia are not only excluded from business dealings with Rumania;

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#### IT'S ALL IN THE POINT OF VIEW

#### CARTELS ARE GOOD because:

They minimize production, determining through private agreements how much of a commodity shall be produced.

They concentrate economic power.

They undertake to say how goods shall be distributed and what quantities shall be sold.

They negate the effect of anti-trust laws, legalize price fixing among competitors, and work a hardship on the consumer by maintaining artificial high price levels.

They attempt to put industry into a straitjacket according to a preconceived plan.

They divide world territories into non-competing trade areas, and act as private barriers to import and export trade.

They suppress technological developments and deny public access to such improvements.

#### CARTELS ARE BAD because:

They fit production to the need and to the capacity to consume.

They divide monopolistic power between several producing units rather than one.

They exercise a benevolent trusteeship of established industrial production systems for the common good.

They give security to producing industries by assuring profits, preventing ruinous competition and surplus production which bankrupt industries and cause unemployment.

They achieve economic stabilization by agreement instead of industrial warfare.

The rest of the world is committed to the cartel system of doing business, and we must do likewise to have a place in world trade.

They channel technological progress without incurring its disrupting influences.

# Seller's Liability on Sales Contracts

D URING the past few weeks the higher courts in different states have rendered many interesting and informative decisions involving the liabilities of sellers who breach contracts for sale of merchandise. We shall review these modern decisions. Readers will do well to file these new citations for future reference and possible use in defending similar unavoidable law

#### **Priority Breach**

Considerable discussion has arisen from time to time over the legal question: Who is liable for breach of a contract caused by insufficiency of priority rating to obtain materials to complete the contract? No doubt numerous suits will in the near future involve this important law.

For example, in Detroit Independent Sprinkler Company v. Plywood Products Corporation, 18 N. W. (2d) 387, reported June, 1945, it was shown that a seller, who also was in the business of installing fire extinguishing equipment and sprinkler systems, entered into a



contract with a property owner. By the terms of the contract the seller agreed to equip the building with a system consisting of 3,599 wet pipe automatic sprinklers and 236 dry pipe automatic sprinklers. The contract consists of a proposal by the seller, dated, to which are attached complete specifications, and a written acceptance by the purchaser. Recent court decisions involving damages for nondelivery or unsatisfactory delivery of merchandise under contracts of sale

By LEO T. PARKER

These papers are *silent* as to Office of Production Management priorities, although the priority system had already been established.

The seller was unable to obtain a priority rating high enough to enable the work to proceed.

Some time later the building owner took the position that the seller had abandoned the job, and arranged to have the sprinkler system installed by a contractor.

The seller sued the building owner for heavy damages based upon breach of the contract.

The purchaser took the stand that it could not be liable for a breach because he was ready at all times to fulfill the terms of the contract, and pay the agreed contract price, if the seller had obtained necessary priority and installed the equipment.

It is interesting to observe that the higher court decided that it was the duty of the purchaser to obtain the proper priority rating and his failure to do so was a legal breach of the contract. In holding the building owner liable in \$12,000 damages, the higher court said:

"It is enough to say that defendant (purchaser) assumed the responsibility of securing the priority rating and cannot now complain as to its insufficiency."

Thus, purchasers who are confronted with suits of this nature will do well to compromise the controversy rather that proceed through expensive litigation and finally be held liable for full damages sustained by the seller who was unable to supply materials due to insufficient priority rating.

Moreover, if similar situations arise in future all purchasers should be certain to include in all contracts, involving priority of materials, a clause in effect that the purchaser will not be liable for breach of the contract in event the seller is unable to make delivery due to neglect or impossibility of the purchaser to secure the high priority rating necessary for the seller to legally supply the materials.

#### Damages Allowable

Generally the measure of damages allowable a purchaser for failure of a seller to deliver goods contracted for is the difference between the contract price and value of commodities at the time of the refusal of the seller to perform the sales contract and deliver the merchandise. Therefore, the purchaser may purchase the same quality of merchandise on the open market and recover damages from the seller equal to the difference between the contract price and the price paid by the purchaser for the goods on the open market.

Also, according to a late higher court decision a suit for breach of a contract of sale of raw materials by



a seller, the buyer may recover full prospective profits he would have earned had the seller not breached the contract. This phase of law therefore relates to future profits, the amount of which often is uncertain. Stating the law in another way: (1) Where the ownership in the goods has not passed to the

buyer, and the seller wrongfully neglects or refuses to deliver the goods, the buyer may recover reasonable damages for nondelivery. (2) The measure of damages is the loss directly and naturally resulting, in the ordinary course of events, from the seller's breach of contract. (3) Where there is an available market for the goods, the measure of damages is the difference between the contract price and the market or current price of the goods, at the time or times when they ought to have been delivered, or, if no time was fixed, then at the time of the refusal to deliver. Thus, with respect to future or anticipated profits lost by a purchaser, as a result of a seller's breach of a sale contract, the court may estimate such future profits and compel the seller to pay this amount to the purchaser as damages for breach of the sale contract.

#### Court Determines Future Profits

For illustration, in Holden v. Schafer Bros. Lumber and Shingle Company, 160 Pac. (2d) 537, reported April, 1945, the testimony showed a manufacturer of doors entered into a contract with a seller of lumber by the terms of which the latter agreed to deliver the quantity of lumber needed by the manufacturer to make its doors.

The seller delivered lumber under the contract for about one month, at the end of which time he refused to make further deliveries. The purchaser made every effort to secure other material from other sources, but was unsuccessful. The result was that he could not fill orders he received from various customers.

The purchaser sued the seller for \$80,000 damages, loss of anticipated or future profits.

During the trial a great amount of testimony was given. The lower court arrived at \$15,000 as reasonable loss of prospective profits by computing the profits which the purchaser would have received had he received lumber and manufactured the doors he could have sold. The higher court approved this verdict, and said:

"The theory upon which prospective profits are allowed is that they must be shown with reasonable certainty. It is not necessary that they be proven with exact accuracy. They are to be determined by the jury from all the tangible evidence in the case, taking into consideration all of the surrounding circumstances

and the situation of the respective parties to the contract."

Also, see Federal Iron & Brass Bed Company v. Hock, 42 Wash. 688, 85 P. 418, 419. In that case the court stated:

"Ofttimes in the breach of a contract of this character the only damages sustained are those of future profits. These may be of a substantial character in contemplation of law, and such as the injured party should be entitled to recover from the party who has without justification broken the contract. The recovery must, of course, be limited to the amount which from all the surrounding conditions, may be deemed to have been reasonably certain had the breach not occurred."

Other higher court cases in which this question has been considered are: Bogart v. Pitchless Lumber Company, 72 Wash. 417; Bromley v. Heffernan Engine Works, 182 P. 929; Florence Fish Company v. Everett Packing Company, 188 P. 792; and Warner v. Channell Chemical Company, 208 P. 1104.

Also, see Long v. Rogers, 185 S. W. (2d) 863, reported May. 1945, where a seller found that he had no goods to spare and so notified the purchaser by letter that he could not fulfill the terms of the sale contract.

In holding the seller liable for breach of the contract, the higher court said that the seller was liable to the purchaser for the difference between the contract price and the price which the purchaser was compelled to pay on the open market for the merchandise the seller failed to deliver.

And again see Vagim v. Empire Packing Company, 146 Pac. (2d) 923, reported March. In this case it was shown that a man named Vagim sued the Empire Packing Company to recover damages be-

cause of latter's failure to deliver raisins under a written contract.

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The testimony proved that Vagim purchased from the Empire Packing Company 190,000 pounds of choice or custom grade raisins, to be packed in 25 pound fiber boxes, at an agreed price of 3 cents per pound to be delivered in February, March, and April. Vagim demanded deliv-



ery but the Empire Packing Company refused to deliver more than 38,700 pounds of the raisins. Vagim was therefore required to purchase 134,300 pounds in the open market, and pay therefor 43/8 cents per pound.

By reason of the failure of Empire Packing Company to comply with the terms of the contract damages were sought by Vagim in the sum of \$1,863.17, representing the difference in price.

In holding Vagim entitled to a full recovery the higher court said that a seller who breaches a valid contract is liable in damages amounting to the full and complete financial loss sustained by the purchaser as a result of the breach.

#### Prompt Purchase

Considerable legal discussion has arisen from time to time over the legal question: When a seller breaches a contract of sale and fails to deliver merchandise, how promptly must the purchaser buy the mer-

Here's how the law has decided who is liable and the extent of damages
. . . when the priority rating is insufficient to permit the supplier to

make delivery

• • • when the buyer is obliged to purchase goods on the open market because of nondelivery

. . when the buyer can demonstrate loss of anticipated profits because of nondelivery

when the purchaser delays in placing his order for alternative supplies

. . when goods delivered are not equal to the samples shown at time of sale

. . when no formal acceptance of the order has been established

. . when the purchaser accepts substitute materials

when the purchaser delays in complaining of defects in delivered goods

chandise elsewhere to recover damages? The answer to this question is: If the purchaser has any good reason to not buy the merchandise immediately, he may delay buying it for a reasonable period of time.

#### Purchaser Delayed Too Long

For illustration, in Southern Company v. Adams, 24 S. E. (2d) 719, reported May, it was shown that a buyer and seller signed a written contract by the terms of which the latter agreed to deliver to the former a stipulated quantity of merchandise for a specified price. This contract was signed March 15 and a clause in the contract stated that the seller would deliver the merchandise "immediately". March 18 the purchaser demanded delivery, which the seller refused. On May 7 the purchaser went into the open market and purchased the same quantity and quality of merchandise for \$750 more than the price specified in the written contract, plus \$22.50 freight charges.

The purchaser sued the seller to recover \$772.50 damages. The lower court refused to hold the seller liable because the purchaser had delayed from March 18 until May 7 in buy-

ing the merchandise.



The purchaser appealed to the higher court and proved that during the period between March 18 and May 7 he had on several occasions entered into negotiations with the seller, and believed the seller might complete his contract obligations. Therefore, the higher court reversed the lower court's decisions, and said:

"... A contract for the purchase of goods for 'immediate' shipment means that it is to be performed at once, without delay, forthwith. The measure of damages for breach of contract in failing to deliver goods sold is the difference between the market price of the goods at the time and place of delivery and the contract price of the goods."

It is elementary law that a seller is liable in damages if he delivers merchandise not equal to samples displayed before the contract was made. According to a new higher court decision a purchaser is not required to positively prove all of his assertions.



For instance, in Pederson v. Goldstein, 160 Pac. (2d) 878, reported October, 1945, it was disclosed that a seller had Chrsitmas trees on display, and where a purchaser could examine them. After completing their inspection the buyer contracted for a truck load of the trees which, 3,130 in number and tied in bundles, were delivered on a truck to the purchaser, who paid \$3,200 cash to the seller. A week later when the purchaser undertook to put the trees on display and opened up the bundles the great majority were found to be branches or laterals.

#### Not Equal to Samples

The purchaser sued the seller for breach of a guarantee and testified "The sample trees I saw were full, symmetrical trees. The ones that were delivered were lopsided." Also, certain other persons testified in favor of the purchaser.

The higher court held the purchaser entitled to recover \$2,697 damages, and said that merchandise not equal to the quality of trees displayed and shown to the prospective is direct violation of laws relating to warranties, and furnished a sufficient basis for the decision in favor of the purchaser.

Furthermore, this court explained that the jury may decide whether the delivered merchandise equaled the quality of samples displayed before the contract was made, and that the complaining buyer need not positively prove all of his assertions.

Modern courts hold that, where a seller delivers merchandise not equal to displayed samples, the measure of the damages is the difference between the value of the delivered merchandise and the value of the goods displayed before the contract was made.

For illustration, in Lutgert v. Schaeflein, 47 N. E. (2d) 359, the suit involved damages allowable to a purchaser where the testimony showed that the bricks delivered by the seller did not correspond with the samples.

The court decided that the testimony proved that the bricks did not conform with the samples displayed by the seller; that the purchaser could not by ordinary inspection have discovered that the delivered bricks were defective; and that the seller was liable in full damages sustained by the purchaser.

The higher court held that the amount of damages allowable to the purchaser is the difference between the value of the bricks as delivered and the value of the samples displayed to the purchaser.

#### \$1,620 Damages Allowed

Recently, a higher court held a seller may be held liable for unusual damages for failure to deliver merchandise specified in a valid contract of sale.

For example, in Egner v. Mc-Ginnis, 45 Atl. (2d) 655, reported September, 1945, it was shown that a seller agreed to sell a 1938 Hudson six-cylinder sedan with built-in radio at an agreed price.

The seller failed to deliver the 1938 Hudson, and the purchaser

sued for damages.



The higher court allowed the purchaser \$1,620 damages, and said one who breaches a valid contract must account fully to the purchaser.

#### Contract Void

It is well established law that all contracts for sale of merchandise are void and unenforceable if either the buyer or seller fails to positively agree to perform definite services or obligations. Therefore, an important point of law is that in all contracts the buyer must agree to sell and the purchaser must agree to purchase the specified merchandise, otherwise the contract is void, although all other details are clearly expressed.

For instance, in Exchange, Inc., v. Coco, 20 So. (2d) 762, reported March, 1945, the testimony showed that a buyer and seller signed a contract which contained a clause as follows: "The Party of the Second Part (seller) hereby agrees to sell the Party of the First Part 12,000 pounds of Shallots Seed to be delivered by June 1, 1943 at the price of 3 cents per pound...."

The contract contained all other details pertaining to price, quantity, quality, date for delivery, etc., etc. Both the buyer and seller signed the

#### Purchaser Not Obliged to Buy

When the time for delivery of the seed arrived the seller refused to make the delivery, and the purchaser filed suit to recover \$1,440 damages, alleging that he had contracted for a resale of the shallot seeds at a price of 15 cents per pound and because of the seller's failure to deliver in accordance with the contract, he was unable to resell same and sustained a loss of 12 cents per pound on the 12,000 pounds of seed, amounting to \$1,440.

The higher court held that the contract was not valid and enforceable, because it imposed no obligation on the purchaser to buy, although it did impose an obligation

on the seller to sell.

Although the purchaser proved that he had advanced the seller \$75 when the contract was signed, the higher court held the contract not valid, and therefore held the seller not liable in damages. The court said:

"Such a contract is not enforceable and is a nullity if either party thereto desires to so declare it, as the defendant (seller) has in this case."

#### Must Accept Offer

Another important point of law is that where a seller makes a written offer or gives the purchaser a "sales slip", no enforceable contract is completed unless the purchaser signs the offer, or otherwise notifies the seller that he "accepts the offer" thus submitted. The fact that a purchaser "accepts" a sales slip, memorandum, or other written document not signed by both buyer and seller will not obligate the seller to deliver the specified merchandise.

For illustration, in North American v. Cedarburg Supply Company, 18 N. W. (2d) 466, reported June, 1945, it was shown that a seller gave a purchaser a "sales slip" on which was written the quantity, quality and price of merchandise. Also, the seller wrote on the slip: "To be delivered Wed. or Thurs."

Later when the seller refused to make delivery the purchaser sued for damages on the grounds that the sales slip constituted a valid contract on the part of the seller to sell and deliver the merchandise.

The higher court refused to agree with this contention saying:

"It was merely a memorandum of an offer to defendant (seller) by plaintiff (purchaser) as to what it was willing to pay, and there was no acceptance to this offer by defendant (seller) at any time.'



In other words, there was no valid or binding contract because the purchaser had not signed or otherwise indicated his "acceptance" of the slip or memorandum.

#### Acceptance Is Automatic

Under certain circumstances "acceptance" of an offer may be auto-

For illustration, in Champlin v. Jackson, 58 N. É. (2d) 757, reported March, 1945, it was shown that a purchaser ordered 96,000 feet of 1" x 6" x 11/16" lumber for \$39 a thousand surface measure. Later the seller mailed to the purchaser a letter in which he changed the order for 96,000 feet of 1" x 6" x 11/16" to the same quantity of Roofers D2S&2CM & R/S to 11/16 x 5½ face of \$39.00 S. M. "Customer's No. E. B. 9."

Both parties were familiar with the usages of the lumber trade and understood the meaning of the words, figures, letters and symbols used in lumber contracts. It is certain that the seller's letter specified different sizes of lumber than were specified in the purchaser's original order. Therefore, the higher court held that the letter from the purchaser differed so materially from



the original order that the memo-"counter randum constituted a

offer".

Also, the higher court held that although the purchaser could have rejected the lumber, yet since he accepted the shipments he was legally obligated to pay for them and to fulfill all other obligations of the contract.

#### Must Complain Promptly

The higher courts hold that a buyer must promptly complain to a seller of any defects or other unsatisfactory uses of purchased mer-chandise. Failure to do so entitles the seller to collect the full purchase

For example, in Mayflower Sales Company v. Frazier, 60 N. E. (2d) 123, reported June, 1945, it was shown that a company purchased 50 cases of Film-O-Seal, a chemical substance sold to puncture-proof automobile tires. The purchaser refused to pay the contract price of \$576.50 on the contention that the seller had breached its guarantee that the substance was non-injurious to rubber, and would seal punctures in automobile tires.

During the trial the seller proved that its product had been satisfactory to numerous purchasers. Moreover, the seller proved that the purchaser had delayed an unreasonable period of time in making complaint that the product was not satisfactory. Therefore, the higher court held the purchaser bound to pay the full contract price, saying:

"Even, assuming that the warranty in this case was breached, defendant (purchaser) would deemed to have waived any claim therefor, unless they gave notice to plaintiff (seller) within a reason-

able time."

# SEE FAIRBANKS-MORSE FIRST FOR MOTORS

ONSTANT research and development have Contributed many features which make Fairbanks-Morse Motors outstanding. Today, they are an accepted standard in industry.

They serve dependably in underground dampness, in dust-choked mills and elevators, amid the flying chips of iron and steel in the metalworking industry, and on many other difficult jobs.

That's why so many motor users insist on Fairbanks-Morse Motors . . . and that's why you can specify them with assurance of satisfaction.

Fairbanks, Morse & Co., Fairbanks-Morse



# Fairbanks-Morse

A name worth remembering



Diesel Locomotives . Diesel Engines Scales · Motors · Pumps · Generators Magnetos · Stokers · Railroad Motor Cars and Standpipes • Farm Equipment

#### DIE SEPARATOR & WINCH



SINCE general use of their 2000 lb. capacity High-Lift truck is in die handling operations, Lyon - Raymond Corp., 2636 Madison St., Greene, N. Y., offer features with this use in mind.

Die separator consists of removable boom with adjustable hooks. Boom is "hook-over" type requiring no bolts for attachment. For pulling dies and fixtures in and out of racks and presses, a gear type winch with a ratio of 36 to 1 is available. Both the winch and the edie separator may be furnished with standard model truck or added to it.

TOOL PROCESSING PLASTIC TANK PORTABLE plastic coating melting tank of one gallon capacity has been designed for the protective coating

of plugs gages, carbide tipped tools, etc., by Aeroil Products Co., West New York, N. J. Manufacturer says that the full compound "load" for the "Midget 6" can be brought quickly to dipping temperature from a cold start. Leaflet 557 gives complete details.

#### SWIVEL PIPE COUPLING



ALL-FLEX ball bearing swivel pipe coupling is announced by Snyder Sales Corp., 5225 Wilshire Blvd., Los Angeles, Calif. Combination of multiple synthetic packings and metallic seals is said

to offer absolute protection against leakage at high and low pressure, through pipe which swivels or rotates a full 360 degrees. Torque performance is 2.5 inch pounds at 1500 psi, and 9.6 inch pounds at 3000 psi.

PLASTIC SAFETY FLASH-LIGHT PLASTIC: safety flashlight equipped with honeycomb lens is announced by the Justrite Mfg. Co., 2061 N. South-

port Ave., B-1 Chicago, Ill. The special lens provides a wide circular beam three times as large as the "spot" beam. At distance of 8 ft., light covers an area of about 3 ft. in diameter. Dark rings and spots are eliminated. The lamp uses 3 standard flashlight cells. It is 534" high, 234" wide. Reflector is 2½" in diameter.

#### REMOTE GAGING



TO enable hand gaging to be accomplished at a distance from the comparator, Pratt & Whitney, Division Niles-Bement-Pond Co., West Hartford, Conn., has brought out Model R2 Air-O-Limit comparator with booster relay. The relay permits the use of any length hose between the gage cabinet and the gage plug without any loss of speed or accuracy in the gaging operation.

CABINET INDUSTRIAL WASHING MACHINE

CABINET - contained industrial washing machine is announced by the Industrial Washing Machine Corp.,

New Brunswick, N. J. Designated as the RBM it is said to be adaptable to variety of metal washing purposes, quickly, efficiently and thoroughly washing, and rinsing assorted parts, gears, tools, etc., up to 36" in diameter and 30" high.

#### SIMPLE CONVEYOR TROLLEY

FREE-rolling conveyor trolley that is unique for its simplicity, has been developed by Link-Belt Co., 307 No. Michigan Ave., Chicago, Ill. It has no wheel shafts, or spindles, and does not re-



quire separate retainers for its full complement of hardened, accurately balanced alloy steel balls. It is designed to give smoother operation, higher efficiency and long life. It is available for use with Link-Belt overhead trolley conveyors, or may be had separately.

NOZZLE SPRAYS STIFLING FOG NEW fire control nozzle for fixed installations, constructed to produce a fog, is announced by the Blaw-Knox

Sprinkler Division, Pittsburgh, Pa., for use in connection with its various fire control systems. Called the Aquatomic Fog Nozzle, it is claimed to be particularly adapted to the chemical, electrical and petroleum industries. The fog pattern is said to be maintained even at greatly reduced water pressures.

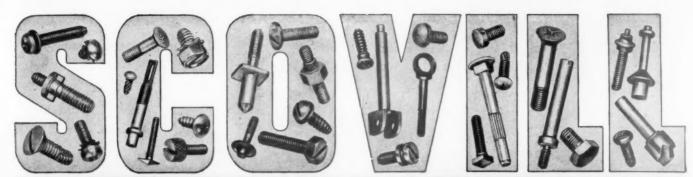
#### INDUSTRIAL WHEELS

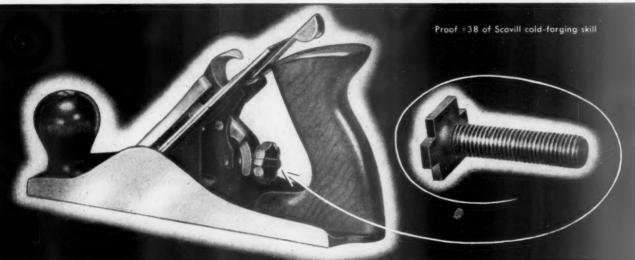
CAST aluminum wheels for solid rubber zero pressure tires are announced by Aircraft Mechanics. Colorado Inc., Springs, Colo. They are split wheels readily mounted to tires



without the use of fitting tool. Wheel halves fit into the tire and become securely seated as wheel bolts are tightened. Available for wheel sizes 2" to 10". Tire sizes range from 6x2.00 to 16x4.00. Printed matter available.

(Continued on page 138)





### ANOTHER CASE WHERE SPECIAL DESIGN CUT ASSEMBLY TIME, AND SCOVILL COLD-FORGING CUT COSTS

The part above is but one of many instances wherein Scovill cold-forging skill and equipment helped customers get better fastenings (frequently at substantial savings over other production methods).

If your product is in the Design stage that is the best place to call in Scovill experts for special, cold-forged fastenings that will reduce assembly time and do a better job on the Job. Scovill cold-forging skill and equipment may not only make such special designs practical but also bring important savings over other production methods.

If your fastenings are already in production Scovill cold-forging may well produce them better for less.

In any event it will pay you to discuss your problem with Scovill. No cost or obligation, of course.

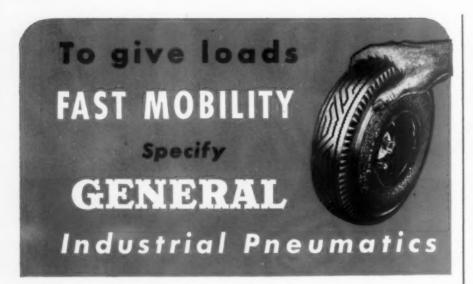
• Call Scovill on these standard fastenings for production efficiency... Phillips Recessed Head Screws...Type FSelf-Tapping Screws...Washer-Screw Assemblies

#### SCOVILL MANUFACTURING COMPANY WATERVILLE DIVISION

WATERVILLE 48, CONN.



TEL. WATERBURY 3-3151



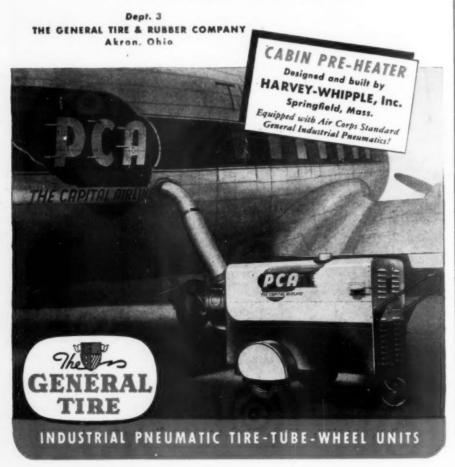
• Heavy loads or mobile equipment . . . move smoothly and faster over rough, soft or smooth surfaces on General Pneumatics. You avoid the spillage and breakage of "rough rides" . . . reduce labor requirements, equipment maintenance and end floor wear and roll-resistance of old-style hard wheels.

ONLY General Pneumatics have the extra-capacity widebase rim . . . quick demountable wheel . . . provide assembled tire-tube-wheel units . . . always ready for use. General Pneumatics are the standard of the Army Air Corps for ground service.

On new material handling trucks or portable equipment specify General Industrial Pneumatics.

#### ASSEMBLED!

Heavy-duty Tire • Separate Tube • Standard Wheel 8" to 22" a. d. for loads of 180—1900 lbs. per tire



#### SPHERICAL ROLLER BEARING

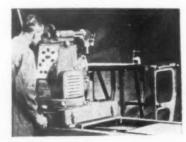


SELF-aligning spherical roller bearing is announced by the Bantam Bearings Division of the Torrington Co., South Bend, Ind. In addition to self-aligning feature, the bearing offers (1) two-directional thrust; (2) high radial capacity; (3) high thrust capacity, and (4) unit construction for easy installation. It is produced in full range of sizes from 1.5748" bore upward. Bulletin 100A describes the bearing.

SMALL CAPACITY HIGH TEMPERATURE HIGH temperature furnace of small capacity for precision treating of high speed steel reamers, cutters,

tools, etc., known as the "Hy-Temp" has been developed by K. H. Huppert Co., 6868 Cottage Grove Ave., Chicago, Ill. It is recommended for continuous operating temperatures up to 2200° F, intermittent to 2250° F. Available in floor and table models it is furnished with automatic temperature control, multi insulation, high-temperature alloy elements, and operates on 110V a-c only. Inside dimensions 5½" wide, 35%" high and 6" deep.

### ELECTRONIC CONTROL TEMPLATE GRINDER



TEMPLATE grinder with electronic control of wheel head axial traverse for the precise grinding of templates and other work up to 72" in length, 8" in depth and 1" thick, without repositioning, is announced by The Sheffield Corp., Dayton, Ohio. Two ratios of cross feed (fast and slow) are provided. Operator views the work through a 20 power microscope in setting the wheel to the work and in performing the grinding operation. Four different reticles having diameters respectively of .005", .0075", .010" and .015" are provided with the microscope.

(Continued on page 140)

# A few of the Many THOUSANDS of USES for Youngstown Wire

Annealed Wires Armor Wire: Armoring Wire Axle Wire

**Bail Wire** Bale Tie Wire Baling Wire **Ball Pin Wire Bed Rods** Bessemer Spring Wire Bicycle Chain Stud Stock Bicycle Spoke Wire Binding Wire **Bolt and Rivet Wire** Bookbinder Wire **Bottle Handle Wire Bottling Wire** Box Binding Wire Box Hinge Wire Brick Cutting Wire **Broom Wire** Brush Wire **Buckle Wire Bundling Wire** 

Cable Armor Wire Cap Screw Wire Car Heater Wire Car Seat Wire Cast Steel Wire Ceiling Hook Wire Chain Welding Wire Chain Wire Chair Rods Chair Wire Channel Bead Wire Channel Pin Wire Check Rower Wire Clasp Wire Clip Wire Clothes Line Wire Clothes Pin Wire Coat and Hat Hook Wire Coppered Wire Core Wire Cork Screw Wire Crimping Wire Croquet Arch Wire Curry Comb Wire Curtain Rods

Damper Rods Double Clinch Wire Dowel Wire Duck Bill Nail Wire

Eave Trough Hanger Wire Edge Wire

Fence Wire Ferrule Wire Firing Pin Wire Flesh Fork Wire Fruit Jar Wire Fuse Wire

Garment Hanger Wire Gate Hook Wire Grape Tie Wire Grass Catcher Wire **Guard Wire** 

Hairpin Wire
Handle Wire
Hatness Snap Wire
Hat and Coat Hook Wire
Hat Rods
Hog Ring Wire
Hook and Eye Wire
Hoop Wire
Hose Binding Wire
Husking Pin Wire

Key Wire
Key Ring Wire
Key Stock
Keystone Wire
Lacing Wire
Lantern Wire
Lathing Wire
Link Wire

Machinery Wire Machine Screw Stock Market Wire Mat Border Rods Mat Wire Muzzle Wire

Nail Head Wire Nail Wire Neck Wire Neck Yoke Ring Wire Netting Wire Nut Crack Steel

Oven Rack Wire
Pail Bail Wire
Pail Rim Wire
Piano Bolt Wire
Piano Rods
Pin Wire
Pivot Wire
Pipe Winding Wire
Plunger Wire
Pot Chain Wire
Poultry Netting
Pump Chain Wire

Rake Tooth Wire Refrigerator Shelf Wire Reinforcement Wire Riveting Wire Rivet Rods Rivet Wire Rope Wire

Saddle Spring Wire Scretch Brush Wire Screen Wire Screw Wire Screw Driver Wire Shade Roller Wire Shelf Wire Snare Wire Spiral Hooping Spoke Wire Spring Wire Stitching Wire THIS check list can help the user of Manufacturer's Wire in two ways: First, it tells you quickly some of the kinds of wire you can get from Youngstown--the kinds we are in position to produce now. Second, this finding list may suggest new products you can make from Youngstown wire, to keep your plant busy and increase sales your

Made from special steel refined in our own open hearth furnaces, Youngstown wire is drawn to exact specifications determined by the use to which the wire is to be put. Because this end use is so important, we suggest that you call in a Youngstown representative to discuss your requirements. With a sample of the wire you are using now or wish to use, representing the finish and physical properties desired, and information as to the product, he can better advise you on deliveries and

prices, also, perhaps, offer other helpful suggestions. Write, wire or phone your inquiry.



### YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Export Office ... 500 Fifth Ave, New York

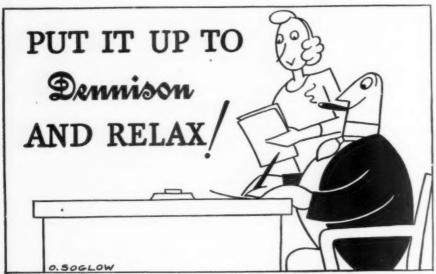
Manufacturers of
CARBON - ALLOY AND YOLOY STEELS
Wire-Nails-Bars-Rods-Sheets-Plates-Conduit-Pape and Tubular Products-Electrolytic Tin Plate-Coke Tin Plate-Tie Plates and Spikes.

Stone Wire Stove Bolt Wire Stove Rods Stud Stock Sucker Rods Surveyors' Chain Wire Towel Rods

Trap Spring Wire

Transom Rods Trellis Wire Tuning Pin Wire Wash Boiler Wire Welding Wire Whip Guard Wire Wood Screw Wire Wrapping Wire





YES, shipping tags and labels can raise some tough questions. So, instead of losing sleep over them, why not do the obvious—consult Dennison first.

If you ship metals, Dennison knows the quality of tag stock that meets express requirements. Do you use bales? Dennison has a tag fastener that is ideal for them. Are your labels applied to rough wood? With our extra heavy adhesive, they really stick.

Dennison has specialized in the planning of shipping tags and labels for so many years that paying infinite attention to a host of details has become second nature. We can also show you how to make tags and labels do important extra jobs. For instance, deliver an advertising message . . . carry order or invoice reference . . . give warnings or instructions.

You can be sure your tags and labels will be correct in design and correct from a practical standpoint when you put your problem up to



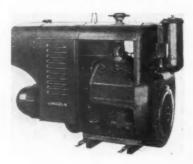
### Dennison

PAPER PRODUCTS THAT PRODUCE RESULTS

Dennison-developed tags and labels direct the shipments of many of the leaders of American industry. If those you now use fall short of your requirements, why not write Dennison Manufacturing Co., 479 Ford Ave., Framingham, Mass.

TAGS . LABELS . SEALS . SET-UP BOXES . MARKING SYSTEMS . PAPER SPECIALTIES

#### COMPACT WELDER

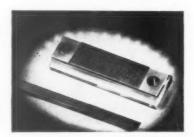


A NEW portable gasoline-engine driven welder is announced by the Lincoln Electric Co., Cleveland, Ohio. It measures 24" x 48" x 30"; net weight of 660 lbs. It has a current range of from 40 to 250 amps and can be used to weld light or heavy gage metal, to repair cast iron structures, and tools and machinery parts, and for hard facing of worn parts. It is powered by a Wisconsin air-cooled 4 cylinder V-type engine and can be mounted on two-wheel trailer.

DIAPHRAGM CLOTH RETAINS FLEXIBILITY NEW 80/80 base, style DL-011 diaphragm cloth, produced by Irvington Varnish & Insula-

tor Co., 6 Argyle Terrace, Irvington 11, N. J., in addition to mechanical strength, is claimed to retain flexibility and be practically unaffected by wide temperature changes. It is recommended for applications where strength, flexibility operating temperatures and resistance to certain solvents are important. Available in standard 100 to 500 yard rolls approximately 37" wide. Samples and other information available.

#### DIAMOND FILES & HONES



LINE of Diamond R Files and Hones for dressing carbide cutting tools without removing them from the machine is being marketed by Wendt-Sonis Co., Hannibal, Mo. The files and hones contain a 100 concentration of diamonds in an exclusive metal bond, which enables them to maintain a flat surface throughout their service life. The tools may be used on high speed steels without loosening the diamond particles. Files are 6" long, ¼" wide, and 3-16" thick. They are available in 240, 320, 400 and 600 grit. Hone is 3" long, ¾" wide and ½" thick and comes in 400 grit only.

(Continued on page 142)



### Just a few seconds more...but then...

A surgical operation was being performed. Only a few seconds more were needed. But at that critical moment the lights went out.

Such a situation might be tragic. And it can happen, for despite all precautions of utility companies a storm, fire, collision or other accident beyond their control can cause interruptions of normal electric current. But in the hospital where an Exide Emergency Lighting Unit stands guard, lights stay on. The change-over is instantaneous, automatic, unnoticed.

There are Exides for every storage dependable motive power for the ... on railroads ... in aircraft and

battery need. Exides furnish safe, efficient, time-saving electric industrial truck and for mine locomotives, trammers and shuttlecars. Exides are used by telephone and telegraph companies, radio and central power stations, commercial and fishing vessels



Diesel-powered automotive equipment. And in millions of cars, trucks and buses, they continue to prove that "When it's an Exide, you start."

For 58 years, the name Exide has stood for dependability, economy and long-life. Information regarding the application of storage batteries for any business is available upon request.

THE ELECTRIC STORAGE BATTERY CO.

Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

OFFERING YOU...



with Proper Tension

It has been definitely proved that properly-regulated tension promotes accurate cutting, minimizes breakage, provides shock absorbing action, and prolongs the useful life of power hack saw blades.

Now you can be sure that the blades in your plant operate under the proper tension and obtain these important advantages. By simply sliding an indicator on the new Millers Falls calculator it is possible to determine this at a glance as well as the feed pitch and strokes per minute for operating a given width of blade on different classes of materials to get the greatest number of cuts.

This new calculator is but one phase of Millers Falls hacksawing service. Another even more important one is the "Tensiometer." A small, easily-attached cylinder, it is the only device made that will measure and maintain the proper tension regardless of blade temperature, blade stretch, or eye elongation.

The calculator teamed with the "Tensiometer" guarantee the best performance from your power hack saw blades. Plan to cut hacksawing costs in your plant by adopting this program. Ask us for the name of the nearest distributor and get a free calculator as well as further details about the "Tensiometer." And for the finest performance in blades, specify Blu-Mol, single and double edge, high speed molybdenum blades.

ONE THING IN COMMON - QUALITY!



Millers Falls Company - - Greenfield, Mass.

#### TRIPLES LIGHT OUTPUT



MOST brilliant lamp ever developed for general commercial use, a 1,000 watt tubular bulb, whose powerful yellow-green light streams from a mercury vapor arc the diameter of a cigaret, is

announced by Westinghouse Lamp Div., Bloomfield, N. J. This air cooled lamp is said to produce 60 lumens for each watt of electricity consumed. Lamp's total output is 60,000 lumens. Overall measurements are 14" long and less than 4" in diameter. It was designed primarily for lighting high ceiling factories, baseball diamonds and other expansive areas where high level of lighting with minimum of reflectors is desirable.

#### ANNOUNCE POSITIONING INDICATING EQUIPMENT

ACCURATE d-c positioning and indicating equipment which can be operated from any a-c or d-c line is

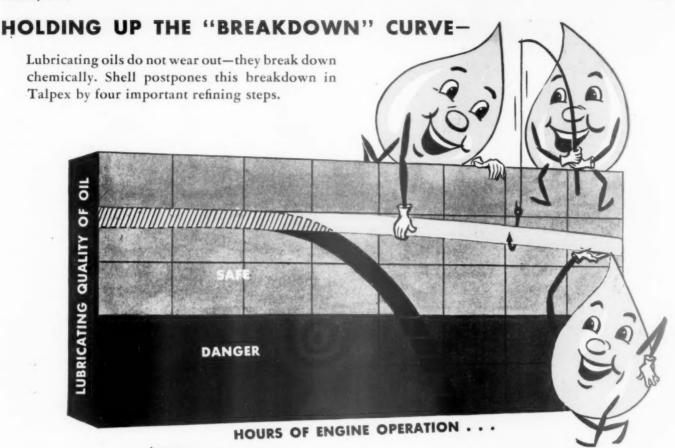
announced by Allis-Chalmers Mfg. Co., Milwaukee, Wis., for general industrial use wherever remote indicating and control systems are employed. It consists of receivers and transmitters. Immediate response without hunting or overshooting is attained over the entire operating range. Power requirements are essentially constant under all operating conditions. Six sizes now available range from 5 ounce inches to 360 pound inches approximate pullout torque. Using a small drip-type rectifier, unit may be operated on alternating current.

#### REVERSIBLE GAGE SETS



THE Size Control Division of the American Machine & Gage Co., 4638 W. Fulton St., Chicago 44, Ill., announces complete line of standard reversible gage sets in cabinets. Thread gages are available in Size Control reversible type which provide two or more gage members. They are made up in partial or complete thread series. Plain plug gages, of Size Control make, of reversible design are also available in the old or new ASME recommended drill sizes, and in fractional sizes in any combination of increments of .001 or by any other size arrangement.

(Continued on page 144)



# THESE 4 TALPEX PERFORMANCE FACTORS SAFEGUARD HIGH-SPEED DIESELS



Talpex is protected by the removal of the oils natural liabilities—those oil components that readily oxidize. Shell does this by means of a special solvent-extraction process.

2.



Tolpex is protected with an anti-oxidant that effectively serves to still further retard the formation of corrosive compounds and objectionable sludge and lacquer.

3.



Talpex has effective corrosion-preventive properties which are obtained by special refining methods. This means better performance and longer life of the engine's wearing parts.

4

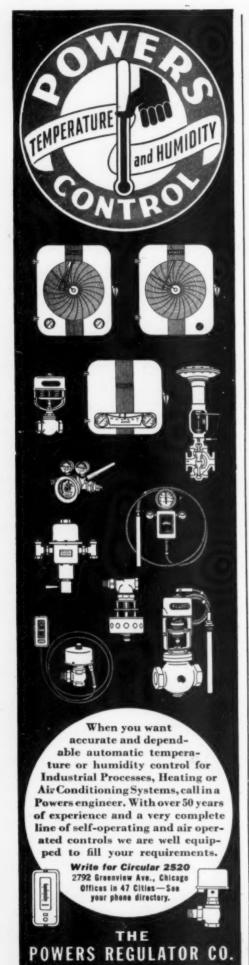


Talpex has detergent properties that keep carbon, lacquer and rust particles from adhering to pistons, rings, valves and ports—keeps these contaminants "moving" until drained from the engine.

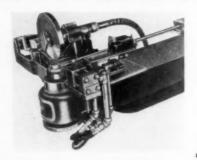
The Shell Lubrication Engineer will give you sound advice about the lubrication of any type of Diesel, whether slow, medium, or high-speed. Write for a copy of Shell's booklet, "The Fundamentals of Diesel Lubrication." Shell Oil Company, Incorporated, 50 West 50th Street, New York 20, New York or 100 Bush Street, San Francisco 6, California.

SHELL

### SHELL DIESEL LUBRICANTS



AUTOMATIC CUT-OFF FOR BENDERS



PINES Engineering Co., Aurora, Ill., announces an automatic cut-off for all 6 sizes of Pines Automatic Tube & Pipe Benders handling 34" to 5" O. D. tubing, and pipe up to 4" O. D. The #34 Pines Hydraulic Bender illustrated is equipped for full automatic manufacture of return bends or elbows. It uses patented booster attachment for tube feed and automatic cut-off. Typical production claimed is 650 pieces bent and cut per hour from 3/4" copper tubing, bent on a 11/2" center.

SAFETY "UTILITY" MARKING OUTFIT

WIDE range of markings are made possible with the Safety Utility Marking Outfit developed by M. E.

Cunningham Co., 154 Carson St., Pittsburgh 19, Pa. The "Utility" holder weighs 10-12 ounces with type setup. It is claimed to be adapted to stamping of brand names, lot numbers and serial numbers on etched plates, keys, silverware, tools, checks, tags, machine parts and for stamping stock numbers on metal bars and sheets. Available in 9 sizes with type recesses from 1/2" to 11/2" in length. Nine sizes of type characters can be used in any size holder.

#### LIGHTWEIGHT AIR HOIST



LIGHTWEIGHT air hoist, only 30 pounds, with variable speed, and requiring 40% less air than hoists of equivalent capacity, is announced by Keller Tool Co., Grand Haven, Mich. Dimensions: Shortest hook-to-hook, 131/4"; wall clearance, 5"; overall length 141/2"; sizes available 500 pounds and 1000 pounds capacity. It provides for load lowering without air. Illustration shows how one man cart-place it in position unaided. Bulletin available.

(Continued on page 148)



Now! Check and REPAIR

MASONRY CHIMNEYS & **WATER TOWERS** 

Trained crews Most modern equipment.

All work covered with Workmen's Compensation and Public Liability Insurance.

Write for full information and dates when crew will be in your locality.



High Structures Division

#### **PROTECTION** COMPANY, INC.

Approved Lightning Protection System DEPT. PN, 11' No. Poorl St., ALBANY, N. Y. Offices in New York and other cities NEW YORK CITY PHONE MU 9-8897

Widely Used to **Keep Count!** 



Industry's favorite "Watchdog of Production" since 1906 . . . Redington Counters are widely used on punch presses, pumps, screw machines, packaging machines . . . conveyor lines, can making and box making machinery . . . in fact, all types of machinery . . . and production lines. Easy to install 100% accurate. Write for new catalog.

PROMPT DELIVERY

F. B. REDINGTON CO.

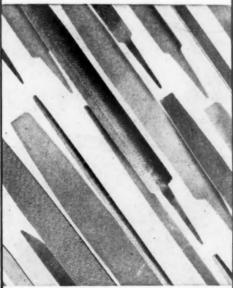
103 S. Sangamon St.

Chicago 7, III.



#### DELTA HAND FILES

File Faster.\* Last Longer. Custom made for every filing job.



\*Actual scientific tests prove that on the average Delta Files will remove 25% more metal in the same first.

Don't overlook the advantages of the Delta Rotary File. It's setting a pace in getting filing jobs done quickly and done right!

Use it in electric or air driven portable machines. It will do any one of hundreds of filing jobs.

Delta Rotary Files, hand-cut or ground, come in every shape and size.

DELTA FILE WORKS, 4837 JAMES STREET, PHILADELPHIA 37, PA.





Behind the attractive quality appearance of Valdura Floor & Machinery Enamels is a tried and tested super-toughness that stretches the service life of busy factory floors and heavy duty machinery.

Made of Valdura processed oils, high grade synthetic resins and superior pigments—they provide maximum resistance to grime, oil, grease, acids, alkalies and fumes. These Valdura heavy-duty enamels also stubbornly check deterioration by snow, ice, moisture and sun; and they are practically immune to harm from vibration and changes of temperature.

Available in a wide selection of brilliant, non-fading colors they are ideally suited

for color identification of piping and safety painting throughout your plant. Quickly drying to a durable high-gloss finish in 6 hours these fine products minimize production delays. Easy to apply by spray or brush on indoor or outdoor surfaces of wood, metal, concrete, brick or canvas—they cover up to 450 square feet per gallon.

Heavy Duty for



Free\_Reduce your maintenance and repair costs—Write
Department 422 for your free
Valdura Painting Guide.

"A GOOD NAME WORTH REPEATING"

AMERICAN-MARIETTA COMPANY

EXECUTIVE OFFICES: 43 EAST OHIO STREET, CHICAGO 11, ILLINOIS



At Shenango-Penn the centrifugal casting process isn't limited to plain rings, cylinders, or other parts of simple circular section. Advanced techniques permit us to cast almost any symmetrical shape centrifugally, thereby cinching a raft of advantages you just can't get by ordinary methods.

Metal for metal you gain greater strength, finer, denser, more uniform grain structure, freedom from porosity, blowholes and sand inclusions, better elongation, and superior resistance to wear and corrosion—qualities that have enabled Shenango-Penn to help many a machinery or equipment

builder to make a good product still better, more durable . . . and usually at lower cost!

Check with Shenango-Penn on the parts you need. If you want them machined, rough-cut or finished to the nth degree of precision, we can take care of that too, in our modern, fully equipped shops.

#### FREE BULLETIN

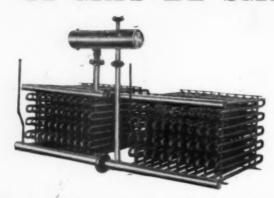
Bulletin No. 143, yours for the asking, gives full information on Shenango-Penn centrifugally cast parts, including specifications, equivalents, and chemical and physical analyses of the many standard ferrous and non-ferrous alloys available. Write for this free data bulletin.



SHENANGO-PENN MOLD COMPANY
2461 WEST THIRD STREET • DOVER, OHIO
EXECUTIVE OFFICES: PITTSBURGH, PA.

ALL BRONZES . MONEL METAL . ALLOY IRONS

## IT MAY BE BIG... IT MAY BE SMALL



Regardless of the size and type of bend required in your installation. Swan specialized experience in bending, coiling and fabrication of piping and tubing offers you skilled engineering service, precise manufacturing facilities, and economical handling of the job from blueprint to on-time delivery.

We are prepared to submit designs, specifications and estimates on intricate coils and bends in any of the standard metals or alloys.



#### SWAN ENGINEERING CO., Inc.

12-58 Nelson Street Bloomfield N. J.

## HEAVY TRAFFIC FLOORS! Rubberlike\* RUNNER

COSTS LESS THAN 6 C PER SQUARE FT.

Here's hard-to-beat economy! Rubberlike, the modern composition floor runner with rugged corrugations protects all heavy traffic areas for less than 6c per square foot! Widely used in factories, offices, schools, hotels, cafes, institutions, Rubberlike cushions and quiets footsteps—makes slippery floors safe. Skidproof even when wet. Easy to clean, Rubber-

like needs no special maintenance, can be put down without cementing. Won't curl at edges. It's amazingly durable—and doubly desirable because of its "petty-cash" cost! Order from your supply house or write for free sample to Bird & Son, inc., Dept. 94, East Walpole,

nakes Dept. 94, East Wa of even Mass. ubber- \* Reg. U. S. Pat, Office

#### COMPARATOR WITH ADJUSTABLE COMPENSATOR



ADJUSTABLE compensator, readily attachable, is announced for P&W Model B2 Air-O-Limit Comparator made by Pratt & Whitney, Division Niles-Bement-Pond Co., West Hartford,

Conn. It allows full scale graduations of .0004", .0006", .0008" and .001" to replace the full scales of .002", .003", and .004" normally used. In addition to higher magnification, it offers the advantages of greater diametral clearance, better side compensation and greater speed. Special series of gaging plugs is required.

MEASURES VACUUM & LOW GAS PRESSURES TUBE for direct microammeter measurement of vacuum and low gas pressures is announced by Syl-

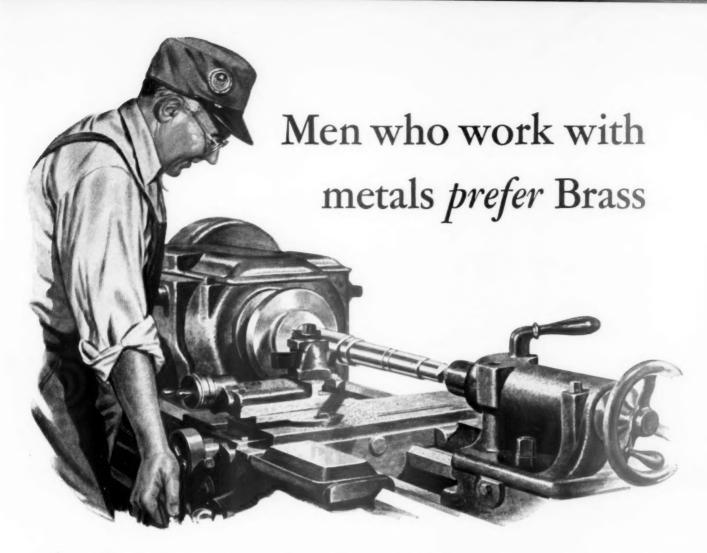
vania Electric Products Inc., Electronics Div., Boston 15, Mass. It will record pressures of 10<sup>-1</sup> to 10<sup>-5</sup> millimeters with plus or minus 5% accuracy. Applications include laboratory use as a pressure gage and leak detector in evacuating apparatus. Operated in a simple three volt battery and resistance circuit it may be sealed directly into evacuating apparatus. Tube is 4-7/16" long over pins and 1-9/16" maximum bulb diameter. It has 4 pin base and may be operated in any position.

#### NEW HYDROGEN THYRATRONS



TWO new types of hydrogen thyratrons suitable for a wide range of applications including the timing of high speed welding equipment, electronic heating for glass and plastic products; electroplating; marine and aircraft radar; and pulse communication systems, are announced by Sylvania Electric Products, Inc., 500 Fifth Ave., New York, N. Y. Features include low deionization time; rapid switching rates; high peak currents; high plate voltage; moderate trigger requirements; ability to operate at zero bias; wide ambient temperature range; low tube voltage drop; and reliable, flexible operation mounted in any position.

(Continued on page 152)



AND FOR GOOD REASONS, TOO! Brass is strong, durable, workable and dependable. It machines readily and takes an excellent finish. On lathe or milling machine, brass lends itself equally well to heavy roughing operations or high speed finishing cuts.

- For the manufacture of screw machine products, the preference for brass has been established over the years. Multiple and complicated machining operations are being performed economically on modern high speed automatics day after day—in thousands of screw machine shops.
- The ductility of brass makes it the ideal metal for press-drawn products as evidenced by its widespread use for cupping and deep-drawing operations. And what better material than brass

for the rapid and accurate production of blanked, stamped or coined parts?

- On drill press or tapping machine, brass is in a class by itself, and any operator can tell you why: Holes drill faster, drills need fewer grindings; reamers hold their size longer and leave mirror-smooth holes; taps operate at higher speeds and produce clean-cut, accurate threads.
- Yes, brass is a workable metal. It can also be rolled, spun, soldered, brazed or welded. Having an attractive color of its own, brass also serves as an excellent, rust-free base metal for almost any applied finish.
- The uniformity and dependability of brass means faster, more efficient production—lower

Continued on next page

#### THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut \* Subsidiary of Anaconda Copper Mining Company
In Canada: Anaconda American Brass Ltd., New Toronto, Ontario



Anaconda Brass Mill Products



All these, and others, too-from a Single Source of Supply

Continued from preceding page

overall costs and higher overall quality. It has proved to be the most economical metal to use for a thousand and one parts and products—from brass butts to brass buttons.

- The American Brass Company produces copper, brass, bronze and nickel silver in all standard compositions and in practically all commercial forms. With the composition, grain size and temper adjusted to the requirements, these metals are readily adaptable to most production methods and equipment.
- For applications requiring unusual physical or corrosion resistant properties, The American Brass Company is prepared to supply a special copper alloy such as Avialite\*, Beryllium Copper, Tobin Bronze\* or its high strength coppersilicon alloys, Everdur\*. Your inquiries regarding the properties and applications of Anaconda Metals will receive the close attention of the Company's Technical Department. \*Reg. U. S. Pat. Off.



#### One of these Booklets may make your job easier

Publication B-28, "Anaconda Copper & Copper Alloys", a 40-page booklet, discusses the standard alloys made by The American Brass Company, their properties, range of applications, and the forms in which they are manufactured.

Publication B-3, "Machining Copper and Copper Base Alloys", is a 32-page booklet giving machinability ratings and suggested speeds, feeds, tool rakes and clearances for basic machining operations. Cutting tool materials are also discussed.

Either one or both of these booklets are available without cost, address:

#### THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut



Anaconda Copper & Copper Alloys



This interesting St. Louis plant follows a modern trend in industrial building construction. The exterior of the building, involving a total area of 200,000 square feet, is completely clad with one of the tonghest and most durable of all sheathing materials... K&M "Century" Asbestos Corrugated roofing and siding.

K&M "Century"

ASBESTOS CORRUGATED

Whether your building plans call for new construction, remodeling or repairs, it will pay you to investigate the many distinctive features of K&M "Century" Asbestos Corrugated and Flat Lumber.

TOUGH... made of asbestos and portland cement combined under tremendous hydraulic pressure.

ADAPTABLE... for all types of industrial buildings—new construction, remodeling, repairs.

ATTRACTIVE . . . has neutral gray color, practical finish, never needs protective paint.

Build to last, and save time and money the "Century" way. Bring your problems to your authorized K&M Distributor. He is well equipped to meet your material and installation requirements for "Century" Asbestos Corrugated and Flat Lumber.

LONG LASTING ... will not rust, corrode, rot ... proof against weather, rodents, termites.

FIRE RESISTANT . . . thus earning low insurance rates.

TIME SAVING . . . comes in 19 different lengths and one standard width . . . easy to handle . . . goes up fast.

Nature made Asbestos

... Keasbey & Mattison has been making it serve mankind since 1873.

KEASBEY & MATTISON
COMPANY · AMBLER · PENNSYLVANIA





## SEE the difference that makes ALL THE DIFFERENCE

Where the limits of ordinary vision stop, that's where Stanley "FLUD-LITE" Magnifiers take over. They show your precision workers and inspectors a whole new world of "unseen" opportunities to refine and make more uniform every product you make. They show up the differences that make all the difference.

That's worth a lot of money to you... but the cost is very small. And they're typical Stanley production aids. A 5" diameter magnifying lens with a 13" focal length is mounted in a friction-arm, swivel-jointed bench frame, without base for permanent mounting on machines or in a portable hand-tool frame. Shadow-free fluorescent illumination is scientifically focused. Easily adjustable to individual worker's vision and position.

"FLUD-LITE" Magnifiers help your workers do better work by helping them to see better. That's good sense, good investment. Now available for prompt delivery. Call your distributor or write for illustrated folder. Stanley Electric Tools, New Britain, Connecticut.





#### SELECTIVE NUMBERING HEAD

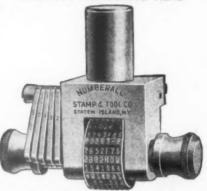
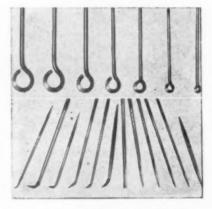


ILLUSTRATION shows selective numbering head, Model 86, with all wheels quick set, announced by the Numberall Stamp & Tool Co., Huguenot Park, Staten Island, N. Y. Wheels are easily set to the required characters by turning the knobs. All wheels are indexed for direct sight reading. Size of figures 1/16" up to 1/4". These selective numbering heads are made with 3 and up to 12 wheels.

VALVES AFFECT WEIGHT SAVINGS STEEL Weld-valve in gate, globe and angle designs, 600 lb. through 2500 lb. standards has been added to

Hancock Valve line of Manning, Maxwell & Moore, Bridgeport, Conn. Designs eliminate or neutralize valve joints, seat rings joints, bonnet joints and improve packing gland points. Weldvalves are said to make for major savings in weight (30% to 60%), space, parts, maintenance and lagging expense, and to give precision and accurate alignment.

#### DEBURRING TOOLS



LINE of hand-forged deburring tools is announced by Metal Products Co., South Bend, Ind. Seven types are featured each in different sizes with a view to furnishing the right tool for every hard-to-get at deburring operation. Tools are suitable for non-ferrous, hard metal work, or plastics. They are said to be especially adaptable for work on deep slots, bottom surfaces, chamfering around holes inside castings, recessed holes, top holes and long channels.

(Continued on page 154)





In addition to induse trial hose, Weather-head plants make all types of fittings, valves, hydraulic cylinders and other parts for these industries:

AUTOMOTIVE

REFRIGERATION

RAILROAD \*

MARINE

FARM EQUIPMENT

ROAD MACHINERY

\*

DIESEL

L. P. GAS

\*

APPLIANCE MANUFACTURERS

Look Ahead with



THE WEATHERHEAD COMPANY, CLEVELAND 8; OHIO Plants: Cleveland, Columbia City, Ind., Los Angeles Canada – St. Thomas, Ontario

New uses are being found daily for the application of our improved industrial hose lines on machinery of all kinds. We manufacture hose assemblies of all types to withstand pressures up to 10,000 P.S.I. They can be equipped with either permanent crimped ends or with re-usable, quickattachable hose ends. For information or literature write or phone any Weatherhead branch office.



SPECIALISTS.

In SHAPES laminated from resins and fabrica (glass, synthetic or cotton) to exacting needs of America's leading industrial engineers. Tell us your shape requirements. We probably can submit samples similar to your needs. Write to Andover Kent. New Brunswick, N. J.—TODAY!

#### **Andover Kent**

YOUR BEST SOURCE FOR

Laminated Shapes



#### AIR OPERATED SPOT WELDER

AIR operated midget bench type spot welders, Universal USP-71/2 is announced by Davis & Murphy, Davis Bldg., 5252 Broadway, Chicago 40, Ill. It is plug-in type and includes solenoid valve con-



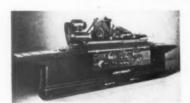
trol of air cylinder, pressure switch and can be furnished with built-in NEMA 1A electronic timer. Also furnished with NEMA 3B or 5B in separate timer panel. It is equipped with airfilter, pressure gage and automatic lubricator. Bulletin available.

PLANT MOBILE CANTEEN SERVICE

FACTORY refreshment pick-up service for workers at their work in the form of mobile

canteen, is announced by Vacuum Can Co., 25 So. Hoyne Ave., Chicago, Ill. Unit is known as the AerVoid Mobile Canteen. Overall length including end shelves, 100"; width 25". Unit has two paper cup holders; 17 trays for sandwiches, bottle goods, candy bars, tobacco, etc. Liquid carriers are extra equipment. Printed matter available.

#### HYDRAULIC GRINDING MACHINES



FOUR precision center-type plain grinding machines have been announced by Cincinnati Grinders, Inc., Cincinnati, Ohio. Power ratings for the two larger sizes are 15 h.p. wheel spindle drive motor and 1½ h.p. hydraulic motor; for the smaller sizes, 7½ h.p. wheel spindle drive motor and 1 hp. hdraulic motor. Catalog available.

CODE DATING: CONTROL NUMBERING MARKING machine named the Markomatic Code Dater for code dating and control numbering; color,

flavor or variety marking is announced by Adolph Gottscho, Inc., 1 Hudson St., New York, N. Y. It marks flat pasteend or tuck-in cartons, envelopes, cellophane, kraft, heat seal, foil or lined bags, tags and labels, at fast production rate. Size of items is limited to 3" minimum length for one model, and 41/2" for another. Production rate for cartons 41/2" long would be 10,000 to 12,000 per hour according to maker.

(Continued on page 158)



STEEL TUBES Globe supplies seamless and welded stainless steel tubing ranging from an outside diameter less than that of an average lead pencil - 1/8 inch - up to 6 inch outside diameter (Iron Pipe Size).

Thick-walled, seamless pressure tubes in carbon and alloy steels from ½ inch up to 65% inch outside diameter for huge boilers in utility and industrial power plants are supplied by Globe, as well.

Your tubing needs may lie somewhere between these two extremes - whatever your requirements, standard or special in a wide range of sizes, shapes, and analyses, Globe is qualified by experience and facilities to supply you with tubing of the quality and uniformity you demand.

GLOBE STEEL TUBES CO., Milwaukee 4, Wisconsin



AINLESS STEEL TUBES \* PRESSURE TÜBES \* GLOBEIRON TUBING \* GLOWELD TUBES CONDENSER AND HEAT EXCHANGER TUBES \* MECHANICAL TUBING

# BETTER METHODS make for BETTER TAPS

are constantly being studied for improving

the quality and serviceability of Winter Taps.

Winter's long experience in tap making and

continual search for new and better methods

have resulted in taps unexcelled in perform-

It pays to specify Winter Taps. Your local

distributor can help you with your threading

Wrentham, Massachusetts, U.S.A. san francisco, california-chicago, illinois-detroit, michigan

ance and service.

problems.

A DIVISION OF THE NATIONAL TWIST DRILL & TOOL CO., ROCHESTER, MICHIGAN

AP making, the outgrowth of an ancient

art of thread forming, dates back many

centuries. Threads were first known to be

used in the thirteenth century on early armor

plate and coats of mail, but it was not until

the early part of the present century that

revolutionary strides were made in the methods developed for tapping threads and for devel-

oping threading tools by precision grinding.

At Winter Brothers, methods of manufacture

COMPANY

## NEW PROBLEMS?

**C-D** improved basic NON-metallics will help you solve them

Many of your "What Material?" problems may be quickly answered by C-D NON-metallics which offer a wide range of electrical and mechanical properties. They provide you with the means of improving product performance, speeding up production, or saving man hours.

The part illustrated is a Vulcoid insulating center for an electrical switch used in mining machinery. Vulcoid was specified because an insulating material was needed that was tough . . . that was resistant to carbon deposit from electrical arcs . . . that would retain its dimensions under humid mine conditions . . . and that could be readily machined.

Other C-D NON-metallics offer exceptional resistance to heat . . . they can be readily FORMED in your own shop by inexpensive forms . . . they are resistant to fungi . . . you should get acquainted with these products NOW, while your engineers are designing new products or looking for means of improving product performance or effecting production economies. Wire, phone or write our nearest office, or send us your blueprints.

RGC-46



BRANCH OFFICES



C-D PRODUCTS

The Plastics

DILECTO-Thermosetting Laminates. CELORON-A Molded Phenolic. DILECTENE-A Pure Resin Plastic Especially Suited to U-H-F Insu-

HAVEG—Plastic Chemical Equipment, Pipe, Valves and Fittings.

The NON-Metallics

DIAMOND Vulcanized FIBRE VULCOID-Resin Impregnated Vulcanized Fibre.

MICABOND-Built-Up Mica Electrical Insulation.

Standard and Special Forms Available in Standard Sheets, Rods and Tubes; and Parts Fabricated, Formed or

Molded to Specifications.

Descriptive Literature

Bulletin GF gives Comprehensive Data on all C-D Products. Individual Catalogs are also Available.

NEW YORK 17 . CLEVELAND 14 . CHICAGO 11 . SPARTANBURG, S. C. . SALES OFFICES IN PRINCIPAL CITIES WEST COAST REPRESENTATIVES: MARWOOD LTD., SAN FRANCISCO 3 IN CANADA: DIAMOND STATE FIBRE CO. OF CANADA, LTD., TORONTO 8



Gontinental = Diamond

Established 1895. Manufacturers of Laminated Plastics since 1911—NEWARK 41 • DELAWARE

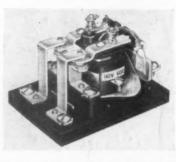


ILLUSTRATION shows new double pole double throw relay (Type PR-8) announced by Potter & Brumfield Sales Co., Department 220, 549 W. Washington Blvd., Chicago, Ill. It is especially designed for such power circuits as motor starting and heater loads up to 15 amperes, or any control circuit requiring fast, positive switching. Metal parts are heavily plated. Coils will not heat on continuous duty.

#### WASTE RECEPTACLES



ILLUSTRATION shows line of waste receptacles being marketed by Bennett Mig. Co., Inc., Alden, N. Y. They are fabricated from heavy gauge steel and reinforced by rounded corners. Doors are independently hinged. Tension spring keeps doors closed when not in use. Receptacles have short legs to keep bottoms off damp floors. Catalog available.

#### WHEEL, PULLEY, GEAR PULLER



ILLUSTRATION shows Klay puller in which the pulling and gripping actions are independent of each other. Lock nut principle securely locks the hooks to the gear or wheel, grip being equally applied on all sides. Pullers are made in two- and three-hook types for pulling anything from a 5%" gear up to a 40" wheel or hub. The Scott & Ewing Co., Dept. D-9, Findlay, Ohio.

(Continued on page 160)



TAYLOR MADE Flash Alloy Steel Sling Chains are outstanding for many reasons. Stress-free welds are guaranteed by Electric Flash Welding of two "U" shaped half-links. This process also prevents the formation of dangerous oxides between the welded surfaces. Taylor's controlled heat-treatment moreover, insures tensile strengths twice that of wrought iron or low carbon steel chains; eliminates the necessity of periodical heat-treating to preserve ductility; increases resistance to work hardness, grain growth and shock at low temperatures. As a result Taylor Chain is world famous for long life and dependability. Write today for *Free* illustrated booklet.



BOX 509P4 . HAMMOND, INDIANA



When cutting oils or other coolants get too hot, high speed lathes must mark time. Overhead piles up while production stands still.

That's why economy-minded plant managers install G-E refrigeration apparatus to keep cutting oils cool . . . to remove the heat of machine tool friction . . . to speed up the production line.

#### Where G. E. can do a job for you

Factories, mills, and other industrial plants all over the country are finding important new uses for G-E refrigeration. Cooling mill rolls . . . cooling

quenching oils . . . seasoning castings . . . anodizing aluminum—these are just a few of the many operations saving time and money through refrigeration.

#### Call in a G-E expert

For refrigeration you can depend on ::: manufactured by General Electric . :: installed by experts . . . call your local G-E distributor. He's listed under "Refrigeration" in your Classified Telephone Directory.

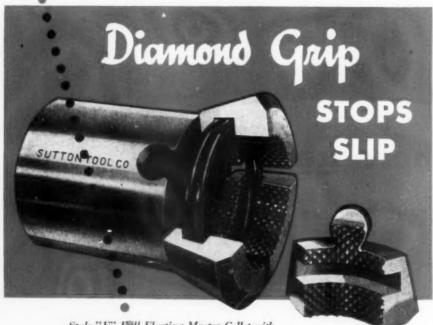
General Electric Company, Air Conditioning Department, Section 6294, Bloomfield, New Jersey.

GENERAL ELECTRIC

**Industrial Refrigeration** 

## SUTTONS

#### RUN AS TRUE AS THE SPINDLE



Style "F" Full Floating Master Collet with Interchangeable, Replaceable Jaws. For Hot Rolled Stock.

- Each jaw floats independently with full bearing on stock.
- Jaws grip tightly with one-third less tension.
- Jaws made with patented Diamond Grip Serrations.
- Prevent slippage—reduce scrap—reduce strain.
- One master per machine—jaw assortment for full range.
- Jaws quickly, easily changed—saving set up time.

"Only Sutton Collets Are Diamond Serrated"

SUTTON TOOL COMPANY STURGIS, MICHIGAN

SUTTON COLLETS

GAPLESS PISTON RING

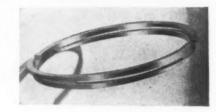


ILLUSTRATION shows Helicam Gapless piston ring announced by The Auto-Diesel Piston Ring Co., 3273 Superior Ave., Cleveland, Ohio. It consists of two identical parts that interlock when completely assembled forming a ring without a gap. Maker states it provides a positive seal with no chance of blowbys. It is adapted for carrying oil within itself if desired. Manufacturer says it can also be made a contracting ring for sealing shafts, for replacing packings, etc. Also, it may be used as original equipment and replacement for Diesel powered units of all types. Circular on request.

PORTABLE TWO-STAGE DUST COLLECTOR PORTABLE selfcontained dust collector which is plugged into lighting circuit, is announced by Aget-

Detroit Co., Ann Arbor, Mich. It incorporates grinding wheel hood. Can be used for wet grinding operations. It has two air cleaning stages. The first is for removing the heavier dust and dirt, lint, bristles, etc., by means of cyclone separator. Second stage is fire-safe spun glass filter which gives the air a final cleaning to remove finer particles of dust before air is returned to the room.

#### TANDEM CRUCIBLE MELTING FURNACE



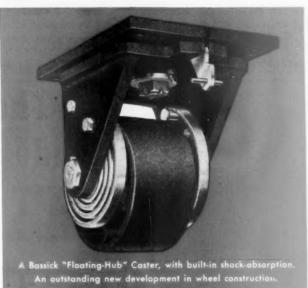
TOP fired crucible melting furnace, using two crucibles fired by gas or oil, in tandem, is offered by Radiant Combustion, Inc., Warren, Ohio. Crucibles are alternately fired. Manufacturer claims faster heating through combined radiant and convection heating, non-plug burners, lower metal loss, a 40 to 50% fuel saving and 50 to 100% longer pot, lining, cover and burner life for the new furnace. Crucibles are available in stationary or tilting types.

(Continued on page 162)



Forward-looking executives know that quicker, smoother movement in the handling of materials saves time, labor and operating expenses. And they make sure of these important 'savings by investing in *better* wheels and casters — that roll easier, last longer and protect floor surfaces.

Is your own portable equipment "wheeled-up" to meet modern standards of efficiency and economy? Check with Bassick — world's foremost producers and developers of wheels, wheel-mountings and casters. At your request a Bassick factory representative will be glad to call, and to make constructive suggestions for improved, cost-cutting mobility. Write to THE BASSICK COMPANY, Bridgeport 2, Conn. Division of Stewart-Warner Corporation. Canadian Division: Stewart-Warner-Alemite Corporation, Ltd., Belleville, Ont.

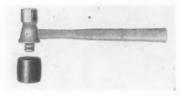


The boss these days is happy
And the reason you must know...
We've standardized on Bassicks
To speed production's flow.



Bassick

#### TWO-IN-ONE HAMMER

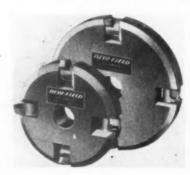


THIS is the Morey 2 in 1 hammer, announced by Dan Morey, Department B 95, 814 So. Robertson Blvd., Los Angeles, Calif. It was developed for use wherever a solid blow must be struck without injuring working surface. Rubber head is renewable. Hammer has hickory handle; shank and head is a drop forging; rubber head is 2" in diameter compounded of truck tread rubber.

NEW TYPE OF FLOOR TILE FLOOR tile made from Panolene type material, is announced by the American Tile & Rubber Co., Tren-

ton, N. J. It is known as Amtico Panolene tile and is said to be suited for use where floors are subjected to hard usage. It is produced in 13 marbelized colors and six standard sizes ranging from 1" x 4" to 9" x 9", 1/8" and 3/16" gauges

#### HEAVY UNIVERSAL FLY CUTTERS



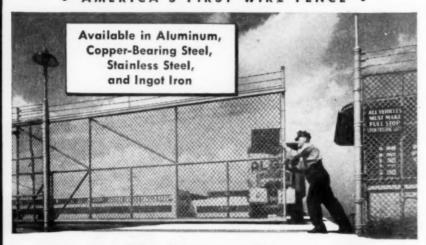
TWO new extra heavy models of the New-Field Universal Fly Cutter, for application on shell end mill arbors, are announced by New-Field Machined Parts Co., 549 W. Randolph St., Chicago, Ill. They are 13%" thick, 6" and 8" in diameter, allowing ample strength for machining driving slots and counterbores, and are provided in all standard arbor sizes which can be machined to fit individual arbor.

NEW RECESSED FLUORESCENT FIXTURE ALL - BRIGHT Electric Products Co., 351 25 N. Kedzie Ave., Chicago 18, Ill., has developed a new 2,

3 and 4-light recessed fluorescent fixture featuring a "Telescopic" frame that fits snug and flush to uneven ceilings. Fixture is designed to give greater footcandle intensity, keener visibility and to eliminate contrasting shadows by using large full depth louvres. Fixture comes ready for individual or row installation.

(Continued on page 164)

## DAGE FENCE-Since 1883

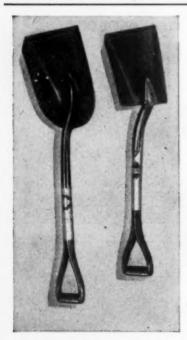


#### Choose the Metal Best for You

● You can again have long-lasting Page Chain Link Fence in a choice of four superior metals to meet your needs or preference, for industrial, institutional or residential protection. You can have corrosion-resisting Page Aluminum at lower-than-ever cost. Or Page Copper-Bearing Steel, heavily galvanized. Or Page-Allegheny Stainless Steel, immune to rust. Or Page-Armco Ingot Iron, purest of commercial ferrous metals. When you choose Page Fence you deal with a nearby firm which is technically trained, long-experienced and reliable. Write to any office listed below for illustrated information you should have.

For name of nearest member firm, write to PAGE FENCE ASSOCIATION in Monessen, Pa., Atlanta, Bridgeport, Chicago, Denver, Detroit, Los Angeles, Philadelphia, Pittsburgh, New York, San Francisco

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE . BRIDGEPORT, CONN.



All Blade Finishes now Black except Molders' Shovels and Grain Scoops which may be furnished with either face or back polished.

#### These Blade Edges WON'T SPLIT

We guarantee this if you make sure to specify . . .

#### INGERSOLL Shovels

The special Tillage Steel, known as TEMCROSS, used in the manufacture of all Ingersoll Shovels, was developed in our own steel mills. By cross-rolling and special heat-treating, we give this steel an interlocking, mesh-grain structure that resists splitting.

#### INGERSOLL STEEL DIVISION

Borg-Warner Corporation NEW CASTLE, INDIANA

Plants: New Castle, Ind.; Chicago, III.; Kalamazoo, Mich.



The right Tire for every job!



UNITED STATES RUBBER COMPANY

Serving Through Science

1230 Sixth Avenue . Rockefeller Center . New York 20, N. Y



FIVE-FINGER FREEDOM ...

## with JOMAC industrial gloves!

FIVE-FINGER FREEDOM... the kind that gives you a sure, firm grip... plus longer-wearing protection... is built into every Jomac Industrial Glove! No more fumbling... no more dropping heavy objects for lack of a firm grip. With Jomac, you've got finger-tip control, as flexible as the hand itself.

And there is scientific reason for Jomac's longer-wearing qualities... for its better, never-failing protection. Jomac's extraordinary fabric is thick with hundreds of protective "cushions"... air-cells held in place by a hidden lock-stitch... giving up to 7 times the wear of ordinary work-gloves!

Jomac Industrial Gloves . . . built for longer wear and better protection . . . will work hand-in-hand with you toward increased production and lower operating-costs. Get the full story today. Write C. Walker Jones Co., 6135 N. Lambert St., Philadelphia 38, Pa. Plants in Philadelphia, Pa.; Warsaw, Ind.; Detroit, Mich. Foreign Representatives: Gillespie & Co. of New York, Inc., 96 Wall Street, New York 5, N. Y.



FOR "HYPER-DRILLING"



NEW type drill designed for hyperdrilling (greatly increased speed in mass production drilling) is announced by the Republic Drill & Tool Co., Chicago. It is known as the "Jet" drill, with accompanying "Jet" director. Tests show 8 seconds elapsed time for drilling ¾" hole 4" deep. Performance is ascribed to great volume of coolant under high pressure; high spindle feeds and speeds; and new principle in drill design. Booklet J-1 describes drill.

PLASTIC FLUOR-ESCENT DIFFUSERS NEW Guth PFC-100's, "4-Foot" white plastic diffusers that snap on or off 40 W (T12) Fluorescent lamps

are said to reduce lamp brightness 30%, yet are claimed to be more efficient (82% T. F.) than glass diffusing panels. They afford light diffusion that minimizes direct and reflected glare, and confine heat of lamp for more consistent operating temperatures. The Edwin F. Guth Co.. 2615 Washington Ave., St. Louis, Mo.

#### HANDLING LONG LOADS



SWIVEL bolster for the handling of unusually long loads of steel rods or beams, timber, or other materials, has been developed by the Mercury Manufacturing Co., 4016 So. Halsted St., Chicago. It consists of two identical assemblies each of which may be attached to a single caster steer trailer by inserting posts into side rack sockets. Lead trailer is pulled by tractor or other suitable power vehicle, and the rear trailer is guided manually.

BRINELL TESTING OF HEAVY SPECIMENS MACHINE for the Brinell testing of heavy and hard to handle specimens is announced by Steel City Testing Labora-

tory, 8843 Livernois, Detroit, Mich. Machine can be set up in assembly line or any other position to suit test requirements. It comes with either standard Brinell microscope for reading diameter of impression, or with direct reading attachment. Two sizes are available, 3'8" between standards for testing specimens 51" in height, and 22" between standards for testing specimens 24" in height.

(Continued on page 168)

## Dodge # Timken

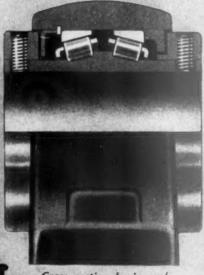
THE COMBINATION FOR POWER ECONOMY

Dodge-Timken Type "E"
Pillow Block.

The photographs show one of the latest developments in Dodge-Timken Pillow Blocks. This is the type "E", designed to provide Dodge-Timken efficiency at the lowest possible cost:

Are you paying for power you are not using? Now is the time to find out. Check up on your transmission equipment and replace the power wasters with modern Timber Bearing Equipmed

Timken Bearing Equipped power savers. The Timken Roller Bearing Company, TAPENED ROLLER SEARINGS Canton 6, Ohio.



Cross sectional view of Dodge-Timken Type "E" Pillow Block.

AP



You can't place a dollars-and-cents value on comfort. But you know from experience how much it means in keeping workers happy and production high.

Seated employees get maximum comfort in Harter Posture Chairs. Because every model has three adjustments—and because there are different models for different jobs—each chair is tailor-made to the worker and the occupation. Steel construction, sturdy welded joints, and foolproof adjustments insure years of trouble-free service.

Combat fatigue and increase efficiency. Give your workers the comfort of the right chair for the job. Harter builds a complete line of posture chairs for use in factory, shop, and office. Ask your dealer, or write to us, for information about the models you need. Industrial Seating Dept., Harter Corporation, Sturgis, Michigan.



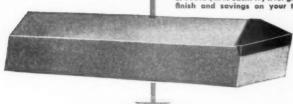
Photo Courtesy Freeman Mfg. Co.

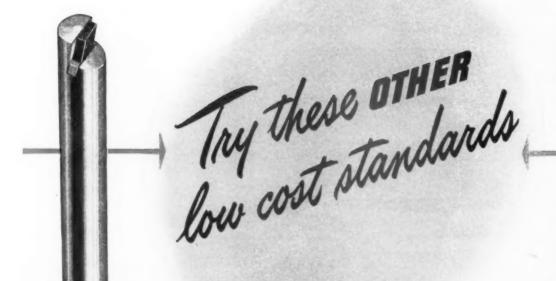


HARTER STEEL POSTURE CHAIRS

#### A NEW ONE! THREADING TOOL

Now standardized at economy prices, this 60° Threading Tool, Style T-15, is stocked in 4 sizes at 95c to \$2.40 each. Try it for greater accuracy, finish and savings on your threading jobs.







For high speed finishing to extremely close tolerances and "mirror-like" finishes. Stocked in "master" styles, ready to grind to suit. Priced as low as 45c each.

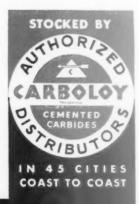


#### FOR ROLLER TURNERS

Full line of "box" tools for W & S, Gisholt, J & L or Acme lathes. Insure uniform, smooth size and finish, fast stock removal, extra long tool life.

For maximum savings from carbide tool use, don't overlook these "special-purpose" standards. They're designed to give you the same top-quality results at the same low cost as Carboloy's well known standards for general purpose turning, facing, boring. It pays to specify Carboloy "Standards." They're quantity-produced at economy prices... planned to provide for diversified use from minimum inventories... quickly available from local stocks in 45 cities, coast to coast. Write for Catalog GT-175R.

CARBOLOY COMPANY, INC., 11191 E. 8 Mile Street • Detroit 32, Michigan CHICAGO • CLEVELAND • DETROIT • HOUSTON • LOS ANGELES • MILWAUKEE • NEWARK • PHILADELPHIA • PITTSBURGH • THOMASTON



Standard (TRADEMARK) CEMENTED CARBIDE TOOLS

VERSATILE 24 inch disc grinder adaptable to all kinds of grinding on metal, wood or plastics, is announced by The Kindt-Collins Co., 12651 Elmwood Ave., Cleveland, Ohio. Table tilts



45° down and 25° up by worm and gear drive. Both faces of grinding disc can be used. Disc will accommodate both flexible back cloth and paper back abrasives. Two models available. Model A with dust collection system, and Model B with 4" exhaust tube.

#### AUTOMATIC SCREW DRIVER



SCREWMATIC is the name of automatic screw driver operated by air or electric power designed to drive screws in wood or metal, being marketed by Reed-Prentice Corp., Worcester 4, Mass. It will drvie all standard or special head screws including slotted, Phillips, square and octagonal. It is light and portable (weighs 6 lbs.) when filled with ½" #6 screws; drives screws to predetermined depth without refill; can be used as portable or fixed tool and can be jigged in gangs. Filling of magazine is accomplished by a semi-automatic filler. One refill machine services five Screwmatics.

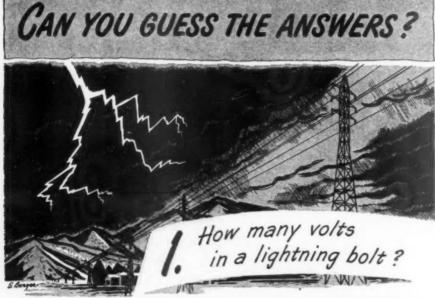
#### MAGNETIC CONTACTOR

FOR machine tool control, marine and mine application, and similar severe duty applications where space is limited, new type Md-c single-pole magnetic contactor is announced by Westinghouse



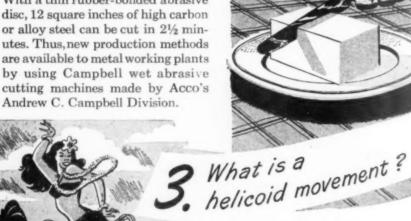
Electric Corp., 306 Fourth Ave., Pittsburgh, Pa. It saves panel space, and unit construction speeds assembly and assures accurate alignment of all parts. Rear or front connected units are available. Contactor is entirely assembled on a small formed frame which also serves as a path for the magnetic flux. Further information may be obtained from Westinghouse Electric Corp., Box 868, Pittsburgh, Pa.

(Continued on page 170)



The answer is 100,000,000. Transmission lines must be protected against lightning bolts by an overhead wire, not connected with the system. This wire intercepts lightning and conducts it safely to earth. Acco's Page Steel and Wire Division makes stainless steel strand which is ideal for this job.

With a thin rubber-bonded abrasive disc, 12 square inches of high carbon or alloy steel can be cut in 2½ minutes. Thus, new production methods are available to metal working plants by using Campbell wet abrasive





A Helicoid movement is a revolutionary, new mechanism developed from the helix principle for use in pressure gages. It supplants spur gearing and greatly increases the gage service life. The Helicoid movement is used exclusively in Helicoid Gages made by the Helicoid Gage Division.

These are only a few of the primary products made by the 17 divisions of ACCO: Chain · Wire Rope · Aircraft Cable · Fence · Welding Wire · Cutting Machines · Castings · Wire · Springs

Lawn Mowers · Bolts & Nuts · Hardness Testers · Hoists & Cranes · Valves · Pressure Gages.



AMERICAN CHAIN & CABLE BRIDGEPORT

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bra

BR



Waste of manpower and equipment, and interrupted service due to failure of bolts, screws, nuts and other fasteners, can be eliminated with today's progress in engineering alloys.

For example, fasteners, fittings and connectors made from Bridgeport's Duronze alloys, possess remarkably high strength-approximately 100,000 pounds per square inch in tensile strength. Duronze, moreover, defies time and corrosion; resists moisture, continuous stress, temperature extremes, weathering, smoke and corrosive gases which rapidly destroy other metals.

You can prevent failures and reduce maintenance expense by specifying Duronze for bolts, nuts, wire and cable connectors; U bolts; cap, machine and wood screws; nails and

other fastening devices.

There are a multitude of other uses for Duronze in industry, such as pole line hardware for power and communication lines; railway signal apparatus; waterworks and sewage equipment; underground construction equipment. Write for the Duronze Manual which contains complete information about Duronze Engineering Alloys. Contact our nearest branch office for any services we can render on brass mill products.



BRASS . COPPER . BRONZE . DURONZE . CUPRO NICKEL . NICKEL SILVER . Strip . Rod . Wire . Tubing

Warehouse and Jobber Stocks Available for Prompt Delivery

#### BRANCH OFFICES AND \*WAREHOUSES

- Atlanta 3, Georgia ... 701 Volunteer Building Boston 16, Massachusetts ... 524 Statler Bldg. ★ Chicago 32, Illinois ... 3453 W. 47th Place Cincinnati 2, Ohio ... 1703 Carew Tower ★ Cleveland 6, Ohio ... 1921 E. 119th Street ★ Denver 2, Colorado ... 1962 Blake Street Detroit 26, Michigan ... 2328 Buhl Bldg. Grand Rapids 2, Mich. Assn. of Commerce Bldg.
- ★ Houston 1, Texas.....2216 Walker Avenue Indianapolis 4, Indiana...525 Circle Tower ★ Los Angeles 12, California, 130 S. Hewitt St. Milwauke 2, Wisconsin, 715 N. Van Buren St. Minneapolis 1, Minnesota. 100 N. Second St. ★ Newark 8, New Jersey....325 Jelliff Avenue New York 17, New York. 420 Lexington Ave. Philadelphia 3, Penn.... Broad St. Sta. Bldg.
- Pittsburgh 19, Pennsylvania, 1322 Gulf Bldg.

  ★ Providence 3, Rhode Island ... 60 Clifford St. St. Louis 8, Missouri ... 414 Continental Bldg. Rochester, New York, 816 Reynolds Arc. Bldg.

  ★ St. Louis 3, Missouri ... .. 2135 Delmar Blvd. St. Paul, Minnesota ... ... 703 Ashland Avenue ★ San Francisco 3, California ... 1155 Bryant St. Washington 5, D. C. ... 715 Southern Building



PO BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. . ESTABLISHED 1865

#### YOU GET:

- Faster Sawing
- Longer Service
- Lower Cost



#### SINE BAR FIXTURE



SINE bar fixture announced by The Sheffield Corp., Dayton, Ohio, is device for checking tapered and angular work which requires high degree of dimensional accuracy. It consists of serrated work

surface hinged to a base plate. Fixture is precision made to a tolerance of .0001 inch. It is available in two sizes, 5" and 10". The 5" fixture may be used on visual gauge equipped with 6" anvil as shown. Either size fixture is suitable for use on a surface plate with a height gage.

SMALL PORTABLE ELECTRIC WELDER ZIPPER-ET is name of small portable welder announced by Mid-States Equipment Corp., 2429 So.

Corp., 2429 So. Michigan Ave., Chicago, Ill. It is recommended for light duty welding and for general maintenance. Welder operates on 110 volt a-c current. Zipper-et complete with all accessories is self contained, and weighs approximately 40 lbs. It will handle 5 sizes of welding rod, 1/32" through and including 3/32", and 1/4" carbons in the arc torch.

#### GRIPCO NUT



ILLUSTRATION shows Gripeo Lock Nut developed by the Grit Nut Co., 308-M So. Michigan Ave., Chicago, Ill. It is a semifinished, one-piece, self locking nut of standard dimensions, and maker

sions, and maker says it does not require lock washers or cotter pins. Wrench is all that is needed to apply or remove it. The triangular deflections on top of the nut provide a controlled friction lock. It is free spinning until the bolt threads contact the deflected threads near the top of the nut.

DRAIN SOLIDS INTER-CEPTOR SOLIDS interceptor with metal strainers that serve as baffles to quiet turbulence of water, permitting solids

to drop readily to bottom of container, is announced by J. A. Zurn Mfg. Co., Erie, Pa. Sediment container is readily removed for cleaning. Unit has non-porous, vitreous body. Water seal in interceptor permits of its use as trap as required by plumbing codes, according to maker.

#### SYNTHETIC RUBBER FLOOR MAT

SYNTHETIC rubber floor mat for offices, elevators and other floors has been developed by chem-

ists of United States Rubber Co., Rockefeller Center, New York, N. Y. It is said to match the quality of prewar mats made out of natural rubber, and will be produced in Gr-S in black, maroon, red, white, green, blue, yellow and salmon. Mats have cenventional corrugated or pyramid surface, with or without perforations.

#### HEAVY-DUTY APRON CONVEYOR



CHAIN Belt Co., 1600 W. Bruce St., Milwaukee 4, Wisc., announces a completely self-contained factory assembled heavy-duty apron conveyor unit. The heavy-duty roller supported apron feeder is furnished in several widths with centers ranging from 4'7" to 9'1", varied by 18" increments. It is said to be widely used under bins and hoppers for heavy lump material such as pit-run gravel and rock. At normal speed of 10' per minute, handling 100 # material, capacities run up to 80 tons per hour.

ELECTRODE PREVENTS UNDERBEAD CRACKING NEW all-position mild steel electrode, called Airco No. 312, PR announced by Air Reduction Sales

Co., 60 E. 42nd St., New York 17, was designed to prevent underbead cracking in welding hardenable steels. Tests indicate it is satisfactory for welding lowalloy, high tensile steels, free machining steels, and cold-rolled steels. Electrode is claimed to make possible production of highly satisfactory vitreous enameled surfaces without preheat treatment.

#### WIRE ROPE CLAMP



THIS is the Cabl-Ox wire rope clamp, which incorporates wedging action, which is said to make it possible to hold loads in excess of the tensile strength of the rope. Clamp is readily assembled and disassembled. It is made in all standard sizes from 1/16" to ¾". It makes a neat, secure small thimble loop; may be used for splicing rope ends securely, or for paralleling two ropes through the clamp. Printed matter available.

(Continued on page 172)



The lubricant grooving system built into Walworth Lubricated Plug Valves is the very heart of the valve. At all times it assures easy operation . . . fast action . . . tight shut-off . . . greater protection against corrosion.

#### FOR TIGHT SHUT-OFF ... EASY OPERATION

Passageways are provided so that when the lubricant screw is turned, lubricant is forced from the lubricant chamber through these passageways which carry the lubricant to lubricant grooves in the seating surfaces. These grooves completely surround the ports and the resistant lubricant with which they are filled seals against leakage.

Walworth Lubricated Plug Valves are available in sizes ½" to 24" for pressures from 125 to 5,000 psi, and for vacuum requirements. These valves are being used successfully on lines carrying gases, air, water, oil, gasoline, chemicals, acids, solvents, and so on. For further information about Walworth's complete line of lubricated plug valves, write for Catalog No. 44L.

Walves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

DISTRIBUTORS IN
PRINCIPAL CENTERS
THROUGHOUT THE WORLD



## HERE you need an ARMOURCIAD FIBRE COMBINATION DISC!

#### Armour Abrasives Cut Clean and Fast, Last Longer

To meet today's big demand for your products, you'll need the fastest tools and the best abrasives possible . . . tools and abrasives that will do your jobs more efficiently, more economically.

For better, faster finishing . . . in cutting welds, in removing burrs, in leveling metal surfaces—in any operation . . . there are specialized ARMOUR ABRASIVES designed to do a better job at less cost. The faster, sharper, cooler-cutting Armourclad Fibre Combination Disc is only one of Armour's complete line of better metal-working abrasives.

It will pay you to call on Armour's experienced technicians. They will gladly help you choose the abrasives and methods which do your jobs best.



ARMOUR
Sandpaper
WORKS

DIVISION OF ARMOUR AND COMPANY
1355 West 31st Street • Chicago 9, Illinois

#### EXTRA THIN BEARINGS

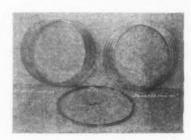


ILLUSTRATION shows bearings 0.750" wide, using 3/8" balls, with inside diameter of 30.500" and outside diameter of 32.000", of the angular contact design, and extra thin bearing of the four point contact design, 0.750" wide, 31.000" inside diameter, 33.000" outside diameter, made by Kaydon Engineering Corp., Muskegon, Mich. For latter, balls are 7/16" and 115 are used in each bearing. This bearing takes the thrust in either direction, and only one bearing is required instead of two bearings of the angular contact type. High carbon chromium steel was used for the races. Inside and outside diameters were ground to a tolerance of plus or minus .001".

SILVER HARDTEM NEW DIE STEEL TO provide die casters of zinc and z in c-lead alloys with a prehardened die steel having excellent service life

and machinability, Heppenstall Co., Pittsburgh, Pa., has developed Silver Hardtem. This new die steel is produced in the form of die blocks as well as die block bars and inserts. It is pre-hardened and requires no further heat treatment by the user, and offers the advantage of free-machining steel. It can be furnished in any desired hardness. Usual hardness for zinc and zinc-lead alloys is between 286 and 321 Brinnel. Folder B 1037 describes Silver Hardtem.

#### DIE FILING MACHINE



THIS is die filing machine introduced by All American Tool & Mfg. Co., 1014 W. Fullerton Ave., Chicago, Ill. Machine is said to insure complete accuracy in filing, honing and sawing. Unit is powered by 1/6 hp, 110-volt a-c motor of 1725 rpm. File or other tool has stroke of 3/4" at 425 strokes per minute. Universal file clamp has a capacity of 1/4" to 1/4" dia. shanks. Printed matter available.

(Continued on page 176)

LOCI CAN' -BUT ROTA

There is no money po screws. SE

SEMS ar types ar

Write us TEST KI large va



## Reduce Assembly Costs with SHAKEPROOF

Pre-Assembled

SHAKEPROOF Lock Washer and Screw



There is no need to waste time and money putting lock washers on screws. SEMS are pre-assembled!



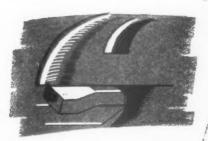
SEMS are available in all standard types and sizes of washers and screws. Specials on request.



Write us today and ask for free TEST KIT No. 23! It contains a large variety of Sems for your own testing purposes.



No lock washers are lost or wasted! Inventories stay balanced because lock washers and screws are delivered as a single unit.



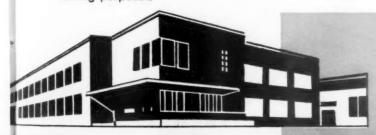
The SHAKEPROOF Lock Washer fits close to the screw shank, providing maximum tooth tact and greater locking power.



SEMS are easier to handle ... perfect for hard to reach places. May be power driven...no need to hold the lock washer under screw head.



SEMS feed perfectly in both magazine and hopper fed power drivers Combine positive vibration protection with high speed production



Division of ILLINOIS TOOL WORKS
2501 North Keeler Avenue, Chicago 39, Illinois

633 South Labrea Ave., Les Angeles 36, Cal. 2895 E. Grand Blvd., Detroit 2, Mich.

#### **CELLULOSE ACETATE CELLULOSE NITRATE** ETHYL CELLULOSE



#### because they're ECONOMICAL

The cellulosics cost less to buy (more material per pound), cost less to form into finished products—with multiple-unit, high-speed injection molding. And there is no loss of materials in the molding operation. Economies such as these mean more attractively priced consumer items, like this colorful, easily cleaned handbag. Comprising 200 mar-proof cellulose acetate "discs", it is rapidly molded-then ready for assembly-36 "discs"



#### because they're COLORFUL

Color to help you sell better . . . color to identify your products easier . . . color to meet varied styling needs. The cellulosics meet every color requirement with an unlimited range of pastels, opaques, translucents, transparents, whites, ivories, pearls, or even mottles. The high luster of these colors remains undimmed by constant handling or cleaning, grease, moisture. With cellulose acetate, cellulose nitrate, or ethyl cellulose, products ranging from molded housings to extruded wire insulation can be permanently

attractive as well as durable.



#### because they're STABLE

Collectively, the cellulosics are stable in form and finish over a wide and useful range of temperatures or exposures to moisture, solvents, acids, alkalies. This propeller protractor is an outstanding example of both the dimensional stability and impact strength of high-acetyl cellulose acetate. With finely spaced calibration molded in, it functions accurately over a temperature range of -58° to +158°F. Although accidentally dropped 60 ft., one of these instruments



## because they're TOUGH

The cellulosics are outstanding where toughness must be combined with light weight. This is one of the reasons why millions of thin-walled soap and toothbrush boxes found in PX's and ships' stores were molded from cellulose acetate . . . why parachute-borne cargo containers were formed from cloth-laminated cellulose acetate—why movie film continues to be made from cellulose acetate or cellulose nitrate. Further evidence of toughness and impact strength is found in metalshaping dies cast from ethyl cellulose, and



## because they're LIGHT WEIGHT

Among the lightest of all plastics, the cellulosics offer a broad range of other useful properties. For example, this aircraft cockpit ventilator—molded from cellulose acetate. Although 17 inches long, it weighs but 16 ounces. It ignores wide temperature extremes, lubricating oil, hydraulic fluid, impact, shocks. Also typical weightsavers are cellulose acetate bottles, often used for airshipment of pharmaceuticals. Blown like glass, they are one-fifth the weight, have 15% thinner walls, yet are virtually shatter-proof.



## because they're TRANSPARENT

Available in crystal-clear, as well as colorful types, the cellulosics bring extra sales-appeal as well as lightweight toughness to a thousand diversified products. These containers, formed by a special mass-production process, let buyers see what they buy without opening the package. They may have walls as thin as one eight-thousandth of an inch. Labels are quickly printed on. Other packages can be rapidly fabricated at low cost by injection molding, extrusion, blow-



## HERCULES

CELLULOSE ACETATE
CELLULOSE NITRATE
ETHYL CELLULOSE

For general-purpose production plastics

Hercules does not make plastics or molding powder, but supplies the high-quality cellulose derivatives from which they are made. For data, please write to

HERCULES POWDER COMPANY

944 MARKET STREET, WILMINGTON 99, DELAWARE





AUTOMATIC-feed, electric soldering iron known as the Eject-O-Matic, has been put on the market by the Multi-Products Tool Co., Newark, N. J. It is designed for all kinds of soldering work. It is trigger operated and ejects a measured amount of solder from a reel concealed in the handle, amount being regulated by a micrometer adjusting wheel. Special stand minimizes danger of burning operator on work bench and leaves operator with both hands free to hold work.

SMALL HIGH SPEED LATHE

SMALL highspeed lathe for use on bench or table is announced by Precise Products Co., Racine, Wis.,

Designed for increased accuracy and speed in grinding, finishing, and polishing small products and parts made of steel, non-ferrous metals, plastics, glass, Working wood and other materials. speeds range from 0 to 40,000 rpm. Power unit can be detached and used separately as a handtool for grinding.

#### VERSATILE LABELER



ILLUSTRATION shows labeler developed by the Vac Spray Machine Co., 1701 Olson Blvd., Minneapolis, Minn.. which will apply labels from the size of a postage stamp up to 5" in diameter on containers from 1/4 oz. to one gallon size, at a rate of from 1200 to 3000 per hour. Labels may be gum-backed or of the ungummed variety - foil, varnished. lithographed, or plain. Containers may be glass bottles, metal cans, cardboard boxes, porcelain jars, jugs, flasks, etc., of any shape. Labeler is portable. Labels and containers are automatically wiped down, sealing edges of labels. Machine is 6' long, 2' wide, 4' high. Containers are hand fed but are automatically conveyed through the machine.

(Continued on page 178)



Specialists in engineering— production — finishing of copper-base alloy parts.

If corrosion is one of your important problems, follow this time-tested and well-recommended procedure fabricate with Ampco Metal and weld with Ampco-Trode.

...weld with Ampco-Trode

In one completely-equipped and self-contained plant, Ampco Metal, Inc. can fabricate assemblies and sub-assemblies that resist corrosion, wear, impact, fatigue, erosion, abrasion, and cavitation. This time-and money-saving Ampco service merits your immediate investigation.

Experienced users tell us Ampco Metal lasts several times as long as ordinary bronzes under difficult conditions. Use this fact to your advantage. Ask Ampco engineers and production specialists to help you adapt fabricated assemblies of Ampco Metal to your requirements. Send us your prints for suggestions.

Write for bulletins.

#### Ampco Metal Inc.

Department P-4

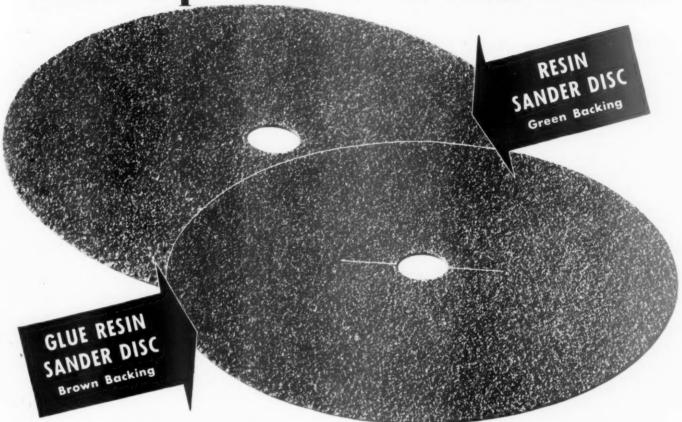
Milwaukee 4. Wisconsin

Ampco Field Offices in Principal Cities

AMPLO:TRODE

Th sar Th

## FIRST NEWS about a BIG improvement in Sander Discs



This is the first information on two new sander discs by CARBORUNDUM. They have such improved performance that we want to get the news to you as soon as possible. A quick listing of advantages would include:

- 1. Substantially longer life.
- 2. Faster cutting.
- 3. Heat resistant.
- Broad application in metal surfacing.

The obvious benefit, of course, will prove to be more production at lower abrasive cost.

The Glue-Resin Sander Disc by CARBORUNDUM, with brown backing, will be found to give broad usage and unusual service in all metal surfacing operations. It is available in the following six grit sizes: 16, 24, 36, 50, 60, 80.

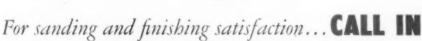
The Resin-Sander Disc, with green backing, and same grit selection as the Glue-Resin Disc by CARBORUNDUM

is specially recommended for severe sanding operations and the edge-wear grinding jobs which take such a heavy toll of ordinary discs. The backing of both discs are marked for ready identification, usage and reordering.

These discs by CARBORUNDUM are standard in 7" and 91/8" dia. The Glue-Resin Sander Discs are available in Type D-1 (center hole with slits) while the Resin Sander Discs are available in Type D-2 (center hole only). Prompt deliveries will be made from standard stocks in plant and branch warehouses.

Call your CARBORUNDUM salesman or distributor's representative for complete information. The Carborundum Company, Niagara Falls, N. Y.

The Carborundum Company



#### CARBORUNDUM

TRADE | MARI

#### BONDED ABRASIVES

#### WHEELS

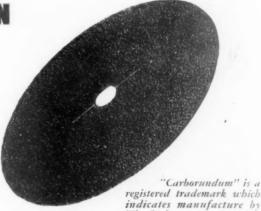
Silicon Carbide Aluminum Oxide Diamond Cylinder Hones Sticks, Stones & Rubs Specialties

#### COATED ABRASIVES

Paper, Cloth and Combination Sheets, Rolls, Discs

#### ABRASIVE GRAINS

Polishing Lapping Pressure Blasting Finishing



FREE BREATHING without DANGER or DISCOMFORT that's workers' experience with

#### No. 94 Healthguard Respirator

Efficiently filters out lead, silica and nuisance dusts, through throw-away paper filters. Speaking diaphragm permits normal conver-sation. Pliable, sealtight rubber with broad easy-resting facial con tact for comfort; adjustable head-bands. Bureau of Mines Approval, No. 2116.



• For protection from dust or fumes . . . prescribe Cesco Respirators for your workers.

Your prescription is supported by two important advantages: First, CESCO Respirators permit free breathing, at the same time giving workers full protection from dust and fume dangers. Second, CESCO Respirators are worn with minimum interference with normal comfort-every possible comfort feature is incorporated into CESCO products.

This combination—assured safety and maximum comfort-makes CESCO Respirators especially popular with wearers. That's why your best buy is CESCO.

#### No. 95 **Fume Respirator**

Cartridge-type respirator for protection from light gas and vapor concentrations. Rubber face cushion shapes to varying facial contours provides air-tight seal, comfortable fit.





No. 80 **Dust Respirator** 

Lightweight diaphragm-type dust pro-tector; contains large, quickly-changed filter pads. Made of molded rubber, with replace-able, soft cloth facelet.

#### CHICAGO EYE SHIELD CO.

2320 Warren Boulevard Chicago 12, Illinois

#### NYLON ROPE

Over 29,000,000 feet of nylon filament is contained in 100 feet of ½"-diameter nylon yacht rope. This startling figure is released by the Plymouth Cordage Company of Plymouth, Massachusetts, pioneer in nylon rope making, and incredible as the figure may sound, it merely indicates the ultra-fineness of a filament of nylon. These filaments are spun into a thread, 68 to a thread, and then a group of these threads are twisted into a ropemaker's yarn. Thirty yarns are combined to form rope strands, 3 of which are laid together to make the rope.

The rope is claimed to offer the following advantages: it has a much higher tensile strength; it has greater elasticity which makes it valuable in an anchor line



for easier riding and safer tension; it resists rot and marine decay; it is easier to handle, dry or wet it does not get stiff or hard, or jam in blocks; it can be stored even when wet and will not deteriorate in storage lockers; it wears longer. The nylon lines have a handsome silvery whiteness.

Companion products are the nylon mooring lines and anchor lines which have the same advantages as the yacht rope, plus their ability to keep the craft safe in heavy weather.

On mule spinners in textile mills, it has been found that nylon drive ropes reduce machine shut-downs, thus contributing to badly needed textile production.

Although the initial cost of the nylon ropes is higher, nylon is said to permit the use of a smaller size for a given strength.

#### 1 1 1 USE RUBBER AS ELECTRIC HEATING UNIT

Rubber is an excellent material for electrically heating many parts on airplanes with which difficulty is encountered in the extreme cold of the high altitudes now flown, a recent bulletin of The B. F. Goodrich Company reveals.

Most engineers, including those in aviation, are accustomed to thinking of rubber as a non-conductor of electricity, but such is not always the case, the bulletin says. Special compounding, changes the characteristics of the rubber so that it can be used in some applications as a conductor and in other cases as an insulating covering for conducting compounds or for other electrical heating elements. This gives a composite product structure.

Among plane applications where rubber has been effectively used to provide heat are some hydraulically operated parts where the fluid has to be kept warm for efficient operation. A molded rubber shoe is placed over the spot to be warmed and electrical current does the job.

Because rubber can be molded to almost any shape, the company points out that literally anything on the plane can be heated by such methods, and complete, as well as spot heating, can be accomplished. Hydraulic, water or steam lines, can be fully covered and uniform temperatures throughout obtained by the application of rubber and electricity.

#### PYRENE RENAMES EXTINGUISHER LINE

Eleven well-established trade names are being boldly thrown overboard in domestic markets by the Pyrene Manufacturing Company, Newark, New Jersey, in favor of only one trade name and more informative labeling.

Almost forty years ago when the company started in business it coined the trade name Pyrene. Gradually other types of fire extinguishing compounds and equipment were added to the line and each type was given a new coined name.

These names, however, were not so well known to users in emergencies. Furthermore some types look alike even though intended for different kinds of fires. Consequently nameplates have been completely redesigned for quicker identification and more legible instructions. Assorted trade names have been dropped and the type of unit has been added in conjuction with the Pyrene Now, for example a Fastfome name. extinguisher becomes a Pyrene Foam.

#### New Plastic Casting Material

A new material, which it is claimed can be used to produce finished castings in only five minutes, and which can be reclaimed like metals by melting, is announced by Duorite Plastic Industries, Culver City, Calif.

It is a combined ceramic and thermoplastic called "Plastiform," and it has been used in making tools for aircraft work, art objects, protective coverings, insulators, scenic casts for stage and motion picture sets, toys, and office equipment.

Plastiform is prepared for casting by melting in a double boiler, whose outer container holds an oil bath to prevent overheating. It can be melted or remelted innumerable times without addi-

After it attains a temperature of more

(Continued on page 180)

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## MEMO: Replace inefficient hand tools right through the plant —

- 1 Cut production costs
- 2 Cut maintenance costs
- 3 Improve workmanship
- 4 Promote safety
- 5 No interruption to production
- 6 Moderate investment

Here's a "RETOOLING PROGRAM" worth looking into!



ALL the hundreds of hand tools used in the average plant may represent less investment than a single machine tool . . . but their over-all effect on costs can total a startling figure! Misfit tools penalize every worker who handles them. The right tool . . . the fastest, safest, easiest to use tool for each job . . . saves man hours straight through the plant.

• "Retooling" with modern Snap-ons can be done quickly and economically, with the certainty of securing every cost-cutting advantage that the most advanced hand tool engineering can provide.

Through 38 factory branch warehouses in key production centers, Snap-on offers direct tool service to industry everywhere.

SNAP-ON TOOLS CORPORATION

8048-D 28th Avenue

KENOSHA, WISCONSIN



## Air Express Goes Everywhere FASTER!



#### Specify Air Express-Better Business Buy Than Ever

AIR	2 fbs.	5 lies.	25 lbs.	40 lbs.	Over 40 lbs Cents per lb
149	\$1.00	\$1.00	\$1.00	\$1.23	3.07c
349	1.02	1.18	2.30	3.68	9.21c
549	1:07	1.42	3 84	614	15.35c
1049	1.12	1.98	7.68	12.28	30.70c
2349	1.45	3.53	17.65	28.24	70.61c
Over 2350	1,47	3.68	18.42	29.47	73.68c

In the face of rising prices, Air Express rates have been slashed 22% since 1943, saving business millions of dollars. And rates include special pick-up and delivery in all principal U. S. towns and cities — with fast, co-ordinated air-rail service between 23,000 off-airline points. Service direct by air to and from scores of foreign countries in the world's best planes, giving the world's best service — at lowered cost.



(Continued from page 178)

than 240° F., the material becomes a fluid which can be poured, brushed, sprayed, or dipped. Molds of almost any type can be used to give it a suitable form. The fluid solidifies in five minutes or less, then the casting is finished.

In aircraft work, Plastiform has been widely used in making dies for stretching metal parts. Such dies have withstood loads of as much as 1,250,000 pounds—enough to shear the parts that were being stretched.

If Plastiform castings should become broken, they can be readily patched with an ordinary soldering iron. Further, they can be machined with all conventional tools and brightly polished with steel wool.

The properties of Plastiform are as follows: Compressive strength, 15.000 p.s.i.; Impact resistance (Izod), 1/3 lbs.; Reclaimability, 100%; Shrinkage on application, Warpage, Abrasive characteristics, None; Melting temperature, 240° F.; Resistance to acids, alkalies, water and oils; Dielectric; Fumes when heated, Non-Toxic; Normal color, Grey-green; Weight, 90 lbs./cu. ft.; Finish, Smooth, glossy.

#### NEW TACKER FOR FACTORY AND SHIPPING ROOMS

New streamlined compression tacker is announced by The Fastener Corporation, 871 Fletcher St., Chicago, Ill. The



tacker is made in two models, for light and heavy Duo-Fast staple tacks. The staples are U shaped and are available in sizes 5/32" to 3\%". The new model tacker loads 84 140 staples, depending on size, and drives automatically into an exact spot by simply pressing the handle. It measures 1"x6"x7" inch, weights but two pounds, and has easy-to-grip plastic handle. Maker states that the tacker has exceptionally strong drive power and low pressure actuation. It is recommended for use in shipping rooms for attaching tags, tickets, box lining and other uses, and is said to be a time and labor saver in any operation where hammer and tacks were formerly used. Printed matter available.

#### UNDERPAVEMENT HEATING SYSTEM MELTS SNOW

E. C. Schwebel, plant engineer at the Wadsworth Watch Case Company, Dayton, Kentucky, believes he has found an

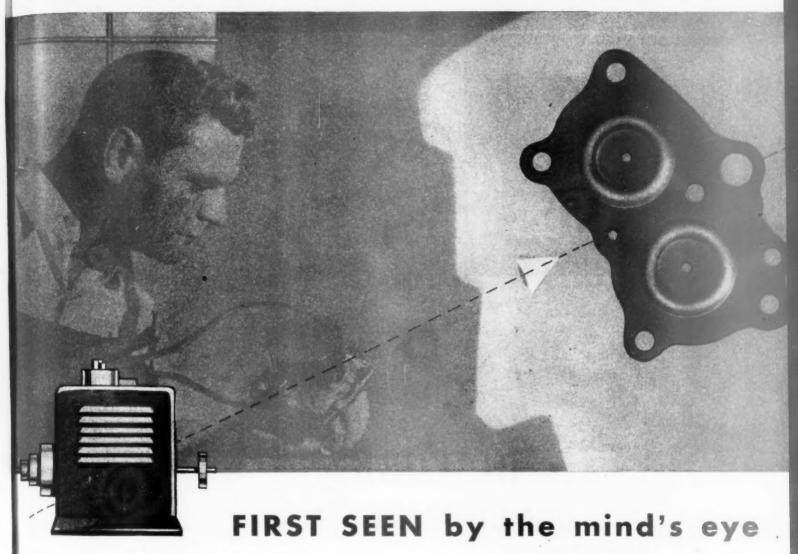
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#### MAN'S ABILITY TO PRODUCE IS LIMITED ONLY BY THE SUBSTANCES HE USES



When the nature and need of a pliable part develops in your mind's eye, the problem of obtaining the correct characteristics may seem insurmountable. In such cases, consider Sirvene.

Sirvene Engineers specialize in formulating, compounding and manufacturing mechanical elastomers in complete accordance with your specifications for oil resistance...temperature ranges...flexibility...durometer hardness and other physical properties.

Sirvene's complete dependability and strict adherance to specifications is assured by using only pure, oil-resistant elastomers . . . having all production steps under constant, rigid laboratory supervision . . . and employing a two-fold final inspection system.

You are invited to consult with Sirvene Engineers whenever you require molded pliable parts that must deliver dependable operation under unusually difficult conditions.



# SIRVENE.

THE SCIENTIFIC COMPOUNDED ELASTOMER

A Product of the Synthetic Rubber Division

CRICAGO RAWHIDE MANHEACTHDING CO.

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Sirvene Engineers are pioneers in the field of scientific compounded elastomers. Since



Machined parts, rejected at inspection for scratches, burrs, snug radii or sharp edges, represent a critical investment in scarce materials and high production costs. Expensive machine salvage operations or outright scrap loss can be avoided—for these parts can be quickly reworked, free-hand, with oilstone abrasive files.

Whether on revolving work or bench pieces, the hard, sharp abrasive crystals in Oilstone Files, shaped for conformity to work contours, quickly but delicately remove burns and sharp edges, refine radii and bevels or eliminate binding of mated parts.

India (Aluminum Oxide, oil-filled), and Hard Arkansas (natural abrasive) files offer Industry a complete size and shape range of over a hundred standard stock items with a finish spread from coarse, medium and fine India, to the surgical fineness of Hard Arkansas. Write for descriptive folder, "Oilstone Files."

\*An ABRASIVE File is ALL FILE!



(Continued from page 180)

answer to the problem of wintertime snow and ice blocking driveways and sidewalks around the buildings of the plant.

He designed an under-the-pavement heating system that keeps the sidewalks



Installation at loading entrance

and driveways warm enough to melt snow as it falls and prevents formation of hazardous ice.

The system was installed in three locations around the plant just before last winter's cold weather and Mr. Schwebel reports that it has turned in a remarkable performance. It not only kept the sidewalks and loading areas open at all times but it eliminated the maintenance and equipment costs attendant to manual snow-removal.

One installation involved a sidewalk 11' wide and 200' long paralleling a new



Steam coils keep entrance free of snow and ice

plant building. The others were a loading area and an ambulance entrance. Only 27' of wrought iron pipe were used for the loading area coils.

Steam was piped to the wrought iron coils buried under the pavement from the plant's boiler room. Adequate provisions were made for condensate drainage and, to prevent the condensate from freezing, the system was kept in continuous operation.

Similar snow melting systems are reported to be attracting the attention of increasing numbers of plant engineers and maintenance supervisors charged with the responsibility of keeping sidewalks and loading docks open at all times.

Engineering data compiled by A. M. Byers Company, Pittsburgh, indicates that a melting rate of 1"of snow per hour is considered to be a practical goal for such systems.

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A new process by which metal, wood, cloth, leather, plastics or almost any other surface can be made usable for

(Continued on page 186)

WEIRTON

HIGH-CARBON STRIP



Here is a high-carbon steel that you can cold-form with greater ease, and can heat-treat accurately after forming, to secure the range of hardness or the springiness desired.

Weirton high-carbon strip cold-rolled spring steel is supplied spheroidize-annealed . . . ductile for easy forming or blanking. It has accurate response to heat-treatment, exceptional uniformity of gauge and width, rigidly controlled chemical

and physical properties, exact constancy of grain structure, and controlled decarburization limits. Where high fatigue resistance or springiness is needed, Weirton high-carbon strip opens wide the door to better products and more economical manufacturing.

Supplied with the desired chemical analysis, and for specified heat-treating and hardness ranges in strips up to 7 inches wide.

WEIRTON



STEEL CO.

WEIRTON, W. VA. Sales Offices in Principal Cities

NATIONAL STEEL

Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.

#### BEGINNING OF THE END of high costs



Processing in a "PREMIER" Colloid Mill Increases Production Economy and Efficiency Improves Product Quality...Free Tests Made

he first step towards lowering processing costs has often been the use of a Premier Colloid Mill. Whether the materials to be improved are liquids, pastes or solids — performance establishes the economy of a Premier in emulsifying, dispersing and disintegrating.

A Premier Mill is a starting point for product improvement. Its intense shearing action affords thoroughness and uniformity in ingredient mixing, continuous homogenizing and fine grinding.

In many fields, purchasing agents recommend Premiers as having proved their value in actual service. Typical fields include adhesives, sealing compounds; asphalt emulsions; ceramic colors; coating and waterproofing emulsions; cosmetics; foods and beverages; oil emulsions; inks; leather finishes; latex — synthetic and natural; lacquer emulsions; lubricating oils, greases; pigment dispersions; organic chemical dispersions; paints, lacquers, varnishes; paper coatings, fillers, waterproofing; pharmaceuticals; plastics, resins; polishes, waxes; rub-

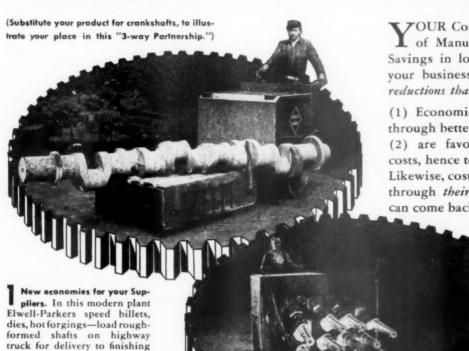
ber compounds; textile finishes. (Special laboratory models are available for research work.)

You can get a "Premier Preview", a free actual-performance test in our laboratories. Just ship your materials to us for a first-hand answer to "What can colloid mill processing do for me?" Premier Mill Corporation, Factory and Laboratory, Geneva, N. Y., General Sales Offices, 110 East 42nd St., New York 17, N. Y.

Descriptive Literature on Request



# It's a 3-Way Partnership—new economies in load-transportation that Industrial LOGISTICS\* can create for you!



YOUR Company serves in the 3-fold capacity of Manufacturer, Supplier and Customer. Savings in load-handling thus become "part of your business" wherever they occur—because reductions that help one, help all.

(1) Economies that your Suppliers can create through better handling of goods coming to you (2) are favorably reflected in manufacturing costs, hence tend to lower your buying costs. (3) Likewise, cost-savings effected by your customers through their faster handling of your product can come back to you in more orders.

Industrial Logistics aids you in reducing costs on your total materials - handling program!

The Elwell-Parker Electric Company, 4519 St. Clair Ave., Cleveland 14, Ohio-

plant, miles away.

\*The science of assembling and handling materials to insure maximum economies at every stage of (a) Pre-

Employing the correct containers (Boxes, Barrels, Bags or Bales) in Master Unit Loads, on Patlets or Skids;

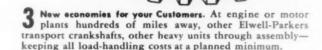
curement, (b) Production and (c) Distribution, using Elwell-Parker Electric Trucks, Tractors and Cranes:

To insure Greater Speed—Faster Production—Greater Turnover—Increased Safety—New Profits.

2 New economies for you. Volume production of high-precision crankshafts is maintained at this famous plant by a fleet of Elwell-Parkers which serve all main processes including delivery of finished units to loading dock.

Here is but one of many sound applications of Industrial Logistics. The Elwell-Parker Materials-Handling Consultant will assist in analyzing your plant conditions and in applying Elwell-Parker Electric Trucks, Tractors and Cranes.

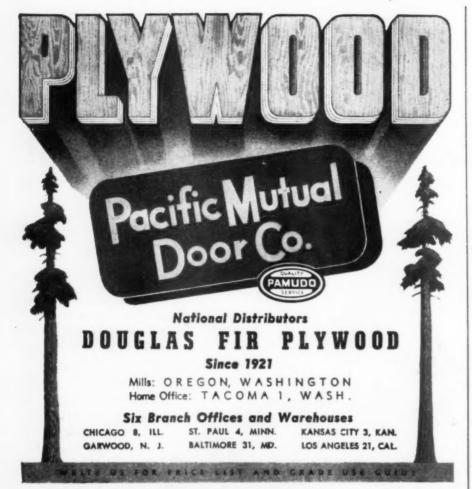
Dial The Materials-Handling Consultant Today!

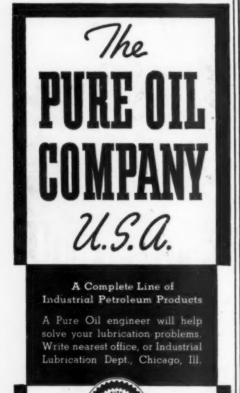




© 1946 The Elwell-Parker Electric Co. ELWELL-PARKER
POWER INDUSTRIAL TRUCKS

Established 1893





with Pure



## MARKING OUTFIT

Nine sizes of type marked with one holder. Furnished in sturdy type box for all interchangeable markings of . . .

- Serial numbers brand names
- Fractional type etc.
- Special steel for safety

Write for literature.



(Continued from page 182)

photographic reproduction will soon be made available to the public by The Glenn L. Martin Company, Baltimore,

Basis of the new process is an emulsion which can be spread on many kinds of materials, sensitizing them for photographic print use. It was developed by Martin laboratory scientists shortly before the war and during the conflict it speeded aircraft production by permitting engineers to work in full scale. Drawings were projected rapidly and in number directly on metal, wood and plastic surfaces. These were then used for reference, fill-in, tooling (tools could be built directly on the templates), inspection tools and for cutting out pieces for experimental aircraft directly from the



drawings projected on the rigid surfaces. Savings thus effected in aircraft engineering and production were enormous and the system was used widely throughout the aircraft industry.

After printing, the metal, wood or plastic prints are developed in the same manner as any commercial photo paper. Either line drawings or continuous tone negatives can be printed, by projection or contact.

In industry the process will have its uses in the reproduction of drawings for manufactured products or machinery. Such drawings can be either to full scale for ease in reading and checking during manufacturing process, or can be reduced if prints to carry are desired. Proportions remain, of course, exact and the need for redrawing to a different size, with possibility of error, is eliminated. The same negative can print to any size desired.

#### PLASTIC LATEX FOR IMPREGNATION AND COATING

1 1 1

Plastic latex made with Geon polyvinyl resins is now adaptable for the impregnation or plain coating of thread, yarn, string and wire, it is announced by The B. F. Goodrich Chemical Company. Cords and threads of fiberglass, nylon, silk, cotton, wool and rayon, as well as wire, have been successfully coated and a variety of uses suggested, according to John R. Hoover, general sales manager of plastic materials.

A technique for stranded materials

(Continued on page 188)

## Available NOW on 24-Hour Shipment ...

R317T, Reynolds new strong aluminum alloy free-machining

# SCREW-MACHI

#### Are your screw-machines hungry for stock? Menidle? Orders unfilled?

Then wire, write or phone us today for a supply of R317T, Reynolds new strong free-machining aluminum alloy screw-machine stock.

#### 24-HOUR SHIPMENTS

R317T is now available in all standard sizes of rounds or hexagons for 24-hour shipment.

#### **ADVANTAGES OF R317T**

This new Reynolds Aluminum alloy is becoming famous for making any finished shape requiring free-machining. Weighing only 3 as much as steel or brass, it puts less strain on machine bearings—is easier on cutting tools—trims with small, free-falling, easily packed chips.

#### **R317T COSTS LESS**

Finished products of R317T cost less than brass because of light weight and small loss in cutting. Often you get a better finished product from this sturdy, durable, war-developed alloy.

R317T is superior to other aluminum alloys for machining because all colddrawing strains are relieved with a final heat treatment in finished form-minimizing warp during machining.

#### SOLVES YOUR PROBLEMS

Reynolds R317T is the new screw-machine stock that may solve your problems now. Save time along your line! Fewer rejects! Finer production faster, at lower cost.

For 24-hour shipments or information, get in touch with the nearest Reynolds office or write, wire or phone Reynolds Metals Company, 2525 South Third Street, Louisville 1, Kentucky. Offices in principal cities.

#### STANDARD STOCK AVAILABLE NOW

17S-T, Reynolds standard screw-machine stock also available on 24-hr, shipment,

#### STRUCTURAL SHAPES

Quick shipment. Strong alloy aluminum rolled structural shapes.

#### FORGINGS-FORGING STOCK

Early shipment on all types and kinds of aluminum forging stock or press forgings contained in an area 7" x 16". Engineering help in designing dies.

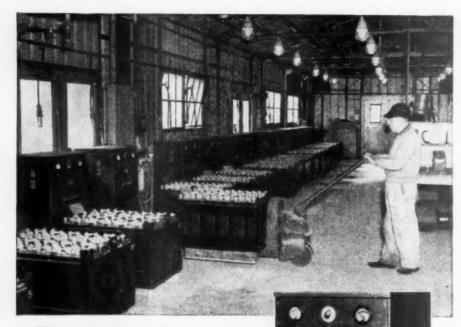
> **Consult Reynolds** for Aluminum NOW



REYNOLD

The Great New ALUMINUM

SHEET . SHAPES . WIRE . ROD . BAR . TUBING .



This Army Ordnance Depot uses G-E automatic chargers to speed handling of ammunition for our armed forces.

#### **AUTOMATIC CHARGING** OF ELECTRIC TRUCK BATTERIES PAYS BIG DIVIDENDS

G-E Automatic Copper-oxide Battery Chargers are designed to meet the exacting charging requirements of large industrial electric truck batteries as well as the smaller requirements of batteries used in motorized hand trucks. Located in central charging stations or in truck working areas these trouble-free chargers offer astounding savings in POWER . . . TIME . . . LABOR.

HERE'S WHY

COMPLETELY AUTOMATIC-The truck operator merely sets a simple control and the charger "takes over." It delivers the charge then shuts itself off.

LOW INITIAL COST-Initial cost low and quickly amortized by reduced power bills, maintenance and labor costs.

REDUCED POWER COST-G-E Copperoxide Chargers operate at 70 per cent efficiency at full load, only slightly less at one-half load.

NEGLIGIBLE MAINTENANCE—The only moving part is the fan which needs lubrication once a year. Removal of dust from the copper-oxide stacks is the other maintenance required.

HIGHLY FLEXIBLE-No costly special foundation, base or other installation equipment is needed. Chargers can be easily moved lation equipment is from place to place.

OCCUPY LITTLE SPACE-The automatic charger occupies approximately three square feet of floor space and can be fitted into convenient unused spots.

NOON-HOUR BOOST-Installed truck working areas the charger will give a "noon-hour" boost to batteries.

For further information, write to Section A467-77, Appliance and Merchandise Department, General Electric Co., Bridgeport, Conn. Ask for the new truck charger bulletin-Publication No. 52-46.

**Keep Buying Bonds** -and Keep All You Buy



(Continued from page 186)

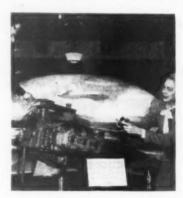
somewhat similar to that used with plastic latex in ordinary fabric coating is employed. A thin, even coat of Geon plastic latex is applied to the thread or card and heated, preferably in a tower having a graduated temperature range from 150 to 300 degrees Fahrenheit. This method yields optimum physical properties, while fair properties can be attained with a uniform temperature of 200 degrees Fahrenheit.

The company has devised a tower apparatus in which this variable regulated temperature range can be most satisfactorily employed, and through which the material can be passed at from 10 to 50 feet a minute, depending on the thickness of the coating. Layout of the apparatus will be furnished those interested.

Textile fibers coated with Geon plastic latex are grease, moisture and abrasion resistant, permeable when used in woven fabrics and have greater durability than when uncoated. Among first products on which the new process may be used are screening, woven upholstery fabrics, tarpaulins, fish lines and thin walled insula-

#### AUTOMOBILE ENGINE MADE OF ALUMINUM

This revolutionary automobile engine of aluminum was introduced by Jack & Heintz at the exhibit "Aluminum Living" sponsored by the Aluminum Com-



Transmission and differential are one piece

pany of America and will be shown in cities throughout the United States following its premiere at Kresge-Newark, Newark, N. J. The unit here displayed is equipped with transmission and clutch for automotive use in the rear end, mounting less than half the usual engine weight. Its transmission and differential are one piece. The engine defies previous conceptions of engineering by fixing horizontally instead of vertically. It is air cooled and no radiator is required. In factory tests the engine developed a peak horsepower of 95 or .75 per cubic in. displacement with ordinary non-premium fuel. Before being placed on exhibit the engine was run well over 1,000 hours at speeds equal to 75 miles per hour road speed, consuming only threequarters of the gas and less oil than the average automobile engine.

(Continued on page 190)

# DOW INDUSTRIAL CHEMICALS



Phenol

-one of over 500 Dow Chemicals Serving American Industry

Dow chemicals are in use today in virtually every branch of industry. Many, like Phenol, are truly key chemicals . . . indispensable to the manufacture of a long list of highly essential finished products.

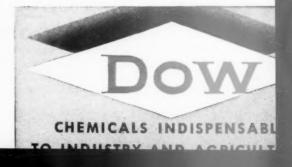
Dow is one of the major Phenol producers of the world. Phenol customers throughout the nation look to Dow for the uniformly high quality...the prompt delivery...that characterize Dow's service on all its Industrial Chemicals.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago • St. Louis

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Caustic Soda • Aniline Oil
Glycols • Chlorides • Epsom Salt
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and more than 75 others.





Faster action, higher operating efficiency, lasting endurance, easier handling-that's what you get in the aptly named High Speed CYCLONE Hoist. You can depend on this "tops in performance," because only in the CM Cyclone will you find 12 anti-friction bearings -a ball or roller bearing at every rotating point. Other extra value features are: Extra safety from the smooth gyrating yoke action... internal guides to prevent load chain slippage...accurate meshing of machine cut gears...shielded lift wheel...CM "Inswell" electric weld load chain. For a hand operated chain hoist here, definitely, is outstanding value.

Capacities from ½ ton up.

CM Bulletin No. 100 contains complete
details. Write for it.

## CHISHOLM=MOORE

(Affiliated with Columbus-McKinnon Chain Corporation)

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#### TRANSPARENT— AND YET A MIRROR

Yes, the strange glass shown in the accompanying illustration serves as a mirror for the girl at the left, but it's also transparent because the face of the girl at the right can be seen through This phenomenon is made possible by new techniques developed by scientists of the American Optical Company, Southbridge, Mass., to reduce or increase glare in glass. Reflections in the glass are so increased that the glass, although still transparent, acquires the characteristics of a mirror. The new reflection control techniques were used during the war to heighten the efficiency of military optical instruments and radar equipment, and postwar uses are now being investigated.

Recently released from military secrecy, the techniques control for the first time light reflected from large areas of glass, plastics, paper, oil paintings and



Shows reflection of girl at left and girl at right can be seen through it

photographic prints without the use of corrosive or dangerous acids or cumbersome, expensive equipment.

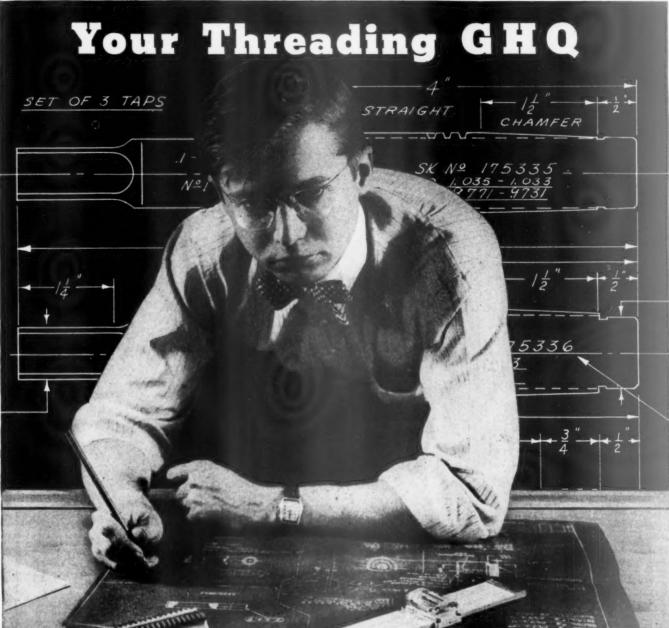
Dr. E. D. Tillyer and H. R. Moulton, who developed the new methods, said they broaden the usefulness of reflection control because previous anti-reflection techniques were in general limited to glass and were practical for small pieces only. Post-war uses are now being investigated.

The new, outstanding feature of the reflection control techniques lies in the fact that they can be utilized to increase reflections as well as to reduce them. Mr. Moulton said.

Ordinary clear glass, he explained, transmits about 92 per cent of light, the remainder being lost through reflections. The eight per cent of reflectivity can be increased by the new technique to over 70 per cent, and a piece of glass so treated resembles a mirror in that an observer can see his face reflected in it although the glass is transparent and can be seen through.

The light-reflecting glass is produced by depositing on its surface a single

(Continued on page 194)

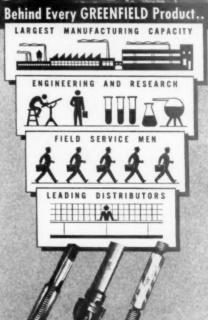


When the man in charge of "operations" runs into a new problem, he usually looks to "General Headquarters" for help... In threading operations on all industrial fronts, the man with a problem is able to go to the engineering department of the Greenfield Tap and Die Corporation for expert help. "Greenfield" engineers can focus on any problem the cumulative "know-how" of years of pioneering leadership in screw thread research.

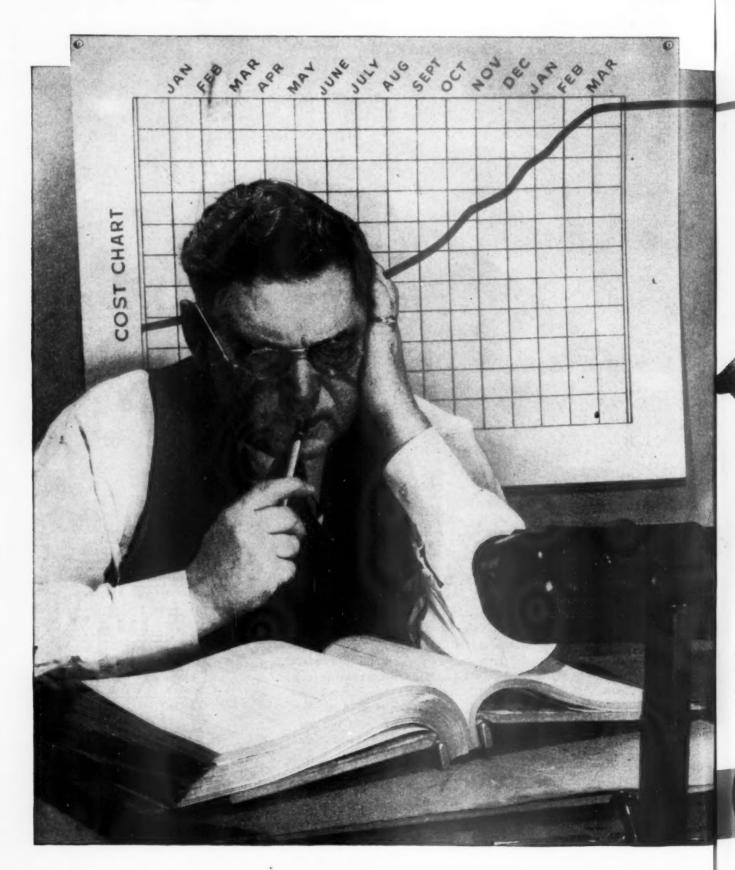
"Greenfield's" threading "GHQ" helps solve specific day-to-day problems for users of threading tools, and also carries on an intensive continuing program of research that benefits all users. If you have a threading problem, get in touch with "Greenfield" screw thread engineers through your "Greenfield" distributor.

#### GREENFIELD

GREENFIELD TAP and DIE CORPORATION
GREENFIELD, MASSACHUSETTS



# Are your manufacturing



# costs too high?



# BRING THEM IN LINE WITH AMERSTRIP

Today, literally thousands of parts, that formerly had to be forged, machined or cast, can be successfully stamped—at lower cost—from cold rolled steel strip.

Into the last four years we have crowded ten years of peace-time progress. In solving some of the war's toughest manufacturing problems we have discovered ways to use steel strip where it has never been used before. We have helped to develop manufacturing processes that now make it possible to meet with stamped parts, tolerance limits usually required for machined parts. And we have learned how to produce strip, in Carbon, Alloy and Stainless Steels, so unfailingly uniform in analysis, gage, size, finish and temper that your high speed production lines, once set up, can be kept flowing without interruption.

This specialized "know how" and the unexcelled facilities of the country's largest manufacturer of cold rolled strip are available to every user of U·S·S AMERSTRIP—not only to improve your peacetime products but to speed up their manufacture and to lower their cost.

Nothing would please us more than to offer immediate delivery of U·S·S AMERSTRIP, but circumstances beyond our control together with a tremendous backlog of orders make this kind of service impossible at present. You can be sure however that we will do everything within our power to take care of your requirements just as soon as conditions permit.

#### **AMERICAN STEEL & WIRE COMPANY**

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, Pacific Coast Distributors
Tennessee Coal, Iron & Railroad Company, Birmingham, Southern Distributors
United States Steel Export Company, New York

UNITED STATES STEEL

EVERY SUNDAY EVENING, United States Steel presents The Theatre Guild on the Air. American Broadcasting Company coast-to-coast network. Consult your newspaper for time and station.



U·S·S AMERSTRIP Cold Rolled Strip



Eyes say "Satisfied,"

behind

MONO Goggle



 All day comfort is realized through its light weight (just over an ounce), rolled edges and shape that fits facial contours.
 The adjustable headband holds the goggle snug without pressure. Two nose sizes assure proper fit.



• Overall eye protection because of large lens firmly anchored in frame but easily replaceable. Resists impact equal to steel ball traveling at 225 ft. per sec. Adequate protection for chipping, grinding, spot welding, etc.



• Available in standard and extra large sizes; curved and flat lens styles; clear or Willson Tru-Hue\* green plastic; ventilated or non-ventilated; clear, frosted or green frame. Can be worn over prescription spectacles with comfort.



For help on your eye-protection problems, get in touch with your Willson Distributor or write for information.

\*\*REG, U. S. PAT. OFF.

PRODUCTS INCORPORATED

Established 1870

221 WASHINGTON STREET . READING, PENNA.

(Continued from page 190)

layer of high reflecting coating or multiple alternating layers of low reflecting and high reflecting coatings. Lovely pastel shades of different colors can be produced by the techniques.

1 1 1

#### FOAMGLASS, WARTIME PRODUCT, USED AS INSULATION AGENT

Products of the tremendous wartime glass research program are finding effective commercial use as industry moves into the reconversion era. Among the wartime developments was Foamglas, a cellular glass insulating material developed primarily for use by the armed forces as a floatation agent and as a moisture-proof and heat resisting insulating material in ship construction.

Foamglas, manufactured by the Pittsburgh Corning Corporation, Pittsburgh, Pa., now is finding wide usage in an extensive variety of industrial applications. Prime users of the product are petroleum companies who utilize it as an insulating material for high temperature towers, tanks and ducts.

One of the most unusual products developed by the age-old glass industry, Foamglas is a cellular inorganic material which is not subject to the deterioration commonly affecting the organic substances found in other type insulations.

#### In Block Form

It is produced by adding finely divided carbon to ground glass and subjecting the mixture to a controlled high temperature heat treatment. Result is a rigid material in block form, one cubic foot of which contains more than ten million cells of inert gas hermetically sealed in pure glass. Refinements in manufacture have lightened the weight of the material, the product now being fifteen parts air and one part glass.

An outstanding quality of the insulating material, particularly as it relates to the petroleum industry, is its resistance to

In tests conducted by the Pittsburgh Testing Laboratory, Foamglas successfully withstood a 24-hour exposure of 1200°F without evidence of combustion or loss of weight.

#### Official Report

The official report stated, "At no time during the exposure was there any evidence of combustion; and during the test, there was no loss of weight of the specimen, since weight before and after checked within less than 0.3 percent.

PC Foamglas meets Underwriters' Laboratories, Inc. Specifications. Classification in Guide No. 540 x 10, File R-2844, dated June 12, 1945.

More than ten separate tests, conducted by private, federal and independent laboratories, failed to find any water absorption or vapor passage. One test was conducted continuously for 246 days. In another, a specimen of Foamglas failed to show any moisture gain under 50 pounds per square inch pressure.

An exceptionally low thermal conduc-

tivity curve, practically a straight line from 100°F below zero to 500°F above zero mean temperature wet or dry, is a highly desirable property in insulations where heat is conserved, controlled or excluded in the petroleum, chemical or petrochemical field.

Lightweight and easy to handle, Foamglas can be readily cut with a knife in straight lines or odd shapes. Because it is friable and crushes locally with point loading, it yields readily to such surface irregularities as rivet heads and welds so that it can be pressed close to the area to be insulated without breaking or cracking. It can be readily shaped to curved surfaces of any radii. The compressive strength of the unique glass product is 150 pounds per square inch.

Foamglas is more rigid and stronger than other materials of this type regularly used for insulation. It will support its own weight on any type of equipment without any intermediate support. While it is not recommended as a structural load-bearing material, it will support evenly distributed loads of 5,000 pounds per square foot when properly protected from point loading.

#### PLASTIC RESISTANT TO HYDROFLUORIC ACID VAPOR

Evidence of the chemical resistance of Plexiglas is given by the successful use of this acrylic plastic for transparent parts exposed to Hydrofluoric acid vapor.

At an eastern chemical plant maintenance men were faced with frequent re-

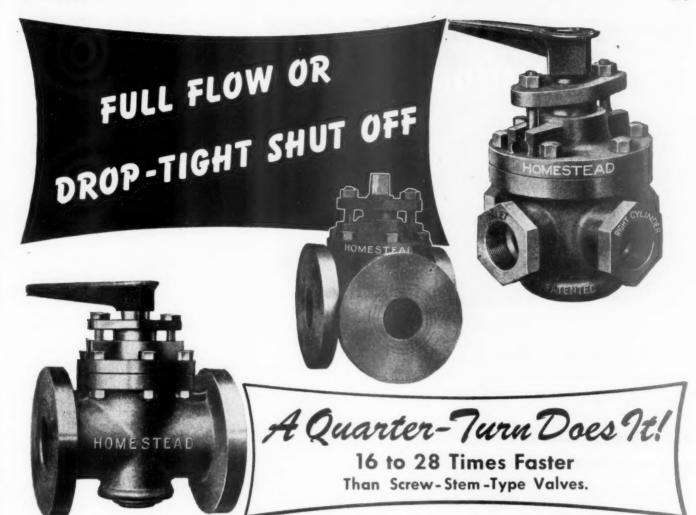


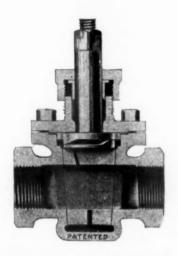
Plexiglas windshield still clear after a year's service; but regular glass window is badly etched after two weeks' service.

placement of the glass windows and windshields of trucks handling hydrofluoric acid and calcium sulfate, by-products of the manufacturing operation. Ordinary glass was etched by the fumes in a few days or even hours. Plexiglas windshields have been practically unaffected by more than a year of continuous service. Plexiglas is also being used for safety goggles worn by operators working with the acid and sludge.

The illustration demonstrates the resistance of Plexiglas to hydrofluoric acid fumes. The glass window which the worker at left is holding is badly etched by two weeks' service in a dump truck handling sludge. The windshield is still clear after the year's service.

Laboratory tests show that the acrylic plate is not affected by 24 hours' immersion in hydrofluoric acid in concentrations less than 20% by wieght. For long-time contact it is recommended that concentrations be kept below 10% by weight.





Sectional View (Open Position) Showing Protected Seating Surfaces, Straight-Line Fluid Flow and Rugged Valve Construction.

For quick, positive control in the handling of air, water, gas, oil and other fluids, HOMESTEAD QUARTER-TURN VALVES are unsurpassed. They act quickly and positively because a simple quarter-turn fully opens or closes the valve, and the patented Homestead cam holds seating surfaces in contact at all times, yet permits easy turning.

When the operating handle is moved to the closed position, the cam surfaces come into contact automatically, thus pressing seating surfaces together to form a "drop-tight" seal. When the handle is turned to the open position, pressure on the cam surfaces is relieved, permitting the plug to turn freely through 90 degrees to a positive stop in the full-open position.

Straight, unobstructed fluid passage, assures "full flow" and minimum drop in line pressure. And because seating surfaces are protected in both open and closed positions, corrosive fluids and grit cannot damage or cause valve failure. Add to these important features the rugged construction characteristic of all HOMESTEAD VALVES and you have the reason why hundreds of users in all types of industry specify HOMESTEAD QUARTER. TURN VALVES for long, trouble-free, low cost service.

HOMESTEAD QUARTER-TURN VALVES are made in sizes, types and metals for most of your valve needs; for pressures to 3000 pounds and temperatures to 750 degrees F. Our engineering department will design special valves to your own specifications. Write for Valve Reference Book No. 38.



HOMESTEAD VALVE MFG. CO.

P. O. BOX 93

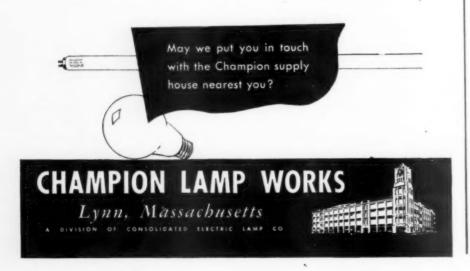
CORAOPOLIS, PENNSYLVANIA



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Champion Industrial Distribution has been carefully developed through qualified local suppliers who know your needs and are in constant touch with you. There's no better, more efficient or more economical way to buy lamps.



#### NATURAL RUBBER NO LONGER INDISPENSABLE

In two short years the United States created a synthetic rubber production capacity of well over 1,000,000 tons a year. This capacity has been large enough to provide rubber for our essential needs and to help meet the requirements of our allies as well, says John L. Collyer, president of the B. F. Goodrich Company.

"The production of synthetic rubber on a large scale was the greatest industrial advance of World War II in terms of immediate utility to millions," he declares. "Henceforth it must be reckoned with in the currents of world trade.

"Natural rebber is no longer indispensable. The unity of synthetic rubber as an alternative has been amply demonstrated. The cost gap in terms of finished product performance between natural and synthetic rubber has been steadily narrowed. This is most important because in any competition for markets or between materials or products, the price or cost of product performance is the dominating factor.

"The world faces an inevitable surplus of rubber productive capacity over the most optimistic estimates of requirements. The major natural rubber producing areas of the Far East are being cleared of enemy forces. Most recent reports indicate that 90% or more of the trees stand intact. Much of the equipment needed in the preparation of natural rubber must be repaired or replaced.

"Yet with the liberation of the Far Eastern rubber lands, the potential ability of the world to produce natural rubber is much the same as before the warapproximately 1,600,000 tons a year. Add to this the world's annual capacity to produce synthetic rubber: In the United States-over 1,000,000 tons. In countries outside the United States-Canada, Russia, Germany and others-nearly 400,000 tons. Or, a possible world synthetic rubber capacity of 1,400,000 tons a year. Thus the potential annual rubber supply of the world will be a total of 3,000,000 tons, if all producing units are operated regardless of economic factors.

"The most careful estimates of world demand for rubber during the immediate postwar years indicate that it will be approximately 1,500,000 tons annually. The fact that the supply of natural rubber will at first be a mere trickle, slowly mounting, explains that we have time—a wear or more— to adopt sound and constructive rubber policies.

"To insure military security, we believe your government should maintain a total standby general purpose (GR-S) synthetic rubber production of 600,000 to 7700,000 tons a year in plants kept in condition and ready to run. From this capacity we recommend a minimum production and use of 200,000 or more tons a year of general-purpose (GR-S) synthetic rubber regardless of economic factors.

"In addition, the probability that approximately 100,000 tons annual production of special purpose synthetic rubbers, including butyl, will be economically justified in future years, provides (Continued on page 200)

# SIMONDS Red Tang FILES

... they keep your File-Costs down

RED TANG FILES have the same basic tooth-design as Simonds Metal-Cutting Saws. So Red Tangs cut, instead of scrape... remove more metal with less elbow-grease. That's why workers like them. And here's why YOU will like them: They last longer... and deliver more and better work per file-dollar. Order Simonds Red Tang Files from your Industrial Supply Distributor, or from the nearest Simonds office listed below.

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SEMS ARE PRE-ASSEMBLED WASHER AND SCREW UNITS IN WHICH THE WASHER IS HELD ON THE SCREW BY THE ROLLED THREAD AND IS FREE TO ROTATE.

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SEMS eliminate time-wasting hand assembly of washers and screws! They are delivered to you *pre-assembled* . . . ready for driving! Get this new, free data book that gives advantages in detail by writing any one of the fastening manufacturers listed below.

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New Britain, Conn.

Eaton Mfg. Co.
Reliance Spring Washer Div.
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The Lamson & Sessions Co. Cleveland, O.

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> National Lock Co. Rockford, Ill.

The National Screw & Mfg. Co. Cleveland, O.

> New England Screw Co. Keene, N. H.

Pheoli Manufacturing Co. Chicago, Ill. Progressive Manufacturing Co. Torrington, Conn.

> Russell, Burdsall & Ward Bolt & Nut Co. Port Chester, N. Y.

Scovill Manufacturing Company
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Waterville, Conn.

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Extra strong construction — openings closely spaced — available in rectangular, diagonal and U shapes — with Safety Steps. Ask for Bulletin 1140.

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AS YOUR DEPENDABLE SOURCE OF SUPPLY

### INDUSTRIAL POWER DISTRIBUTION Three PREFERRED PRODUCTS

Try as hard as you will in planning an Electrical Distribution System and you'll wind up with three preferred products . . .

- 1. BUSWAY . . . for your heavy duty electrical highways from transformer secondaries . . . or from main to sub-distribution control points . . . also quite frequently as a medium for interconnection of two switchboards thru a bus-tie breaker. Capacities from 600 to 4000 amperes, although 2000 ampere feeders (maximum) are desirable from a cost economics viewpoint.
- 2. FLEX-A-POWER . . . for distribution to loads. The 225 ampere size will be your "best buy".
- CONTROL CENTER (preferred over conventional distribution panelboards) . . . which receives its power from (1) and then distributes that power thru (2) . . . or, depending upon type of occupancy, direct to load.

These Trumbull Products are now serving many plants whose names read like a veritable roster of Industry's "Who's Who". You can't go wrong in following suit.

Electrical Wholesaler

THE TRUMBULL ELECTRIC MFG. CO . PLAINVILLE, CONN.
OTHER FACTORIES AT NORWOOD, O. — SEATTLE, SAN FRANCISCO, LOS ANGELES

(Continued from page 196) for security. A minimum annual output of 300,000 tons of synthetic rubbers of all

types

"It is estimated that for the next five years, America's rubber needs will average 825,000 tons a year, or over 25% greater than in 1940. Thus after providing 200,000 to 300,000 tons of security synthetic rubber, there will be left an average of 525,000 to 625,000 tons a year— a high prewar total rubber consumption level—where the choice of material should depend on competition.

"Competition will favor the material which, after weighing cost and finished product performance, will give greatest value. For example, it is worthy of emphasis that special purpose synthetic rubbers, even when higher in price, have already established themselves throughout industry where their special properties

warrant the additional cost.

"In the years ahead, they will continue to find growing though specialized markets, as they do not swell in oils or grease, and have other properties superior to those of natural rubber and generalpurpose synthetics for certain uses.

"Great strides have been made, and will be made, in improving the production and quality of natural rubber. Here, too, competition in quality and price is the challenge."

1 1 1

#### LIFT TRUCK EQUIPPED WITH NON-SWIVEL BOOM

One of the simplest, speediest and most economical methods of lifting and transporting many types of loads in manufac-



Truck transporting rough castings in a machine tool builder's plant

turing operations is by means of a power truck equipped with a horizontal, nonswivel type boom, moving vertically with its shoulder riding in the upright columns of the truck.

This mechanism has proved particularly useful for single, heavy and bulky objects to which a hook, chain, rope or cable may be attached. No muscle-power is required beyond securing a chain or cable to the object and to the hook on the boom. The boom functions somewhat as a boom on a crane, but the complete unit is more compact and can be maneuvered within more limited areas.

Suspended by a short length of chain, (Continued on page 202)

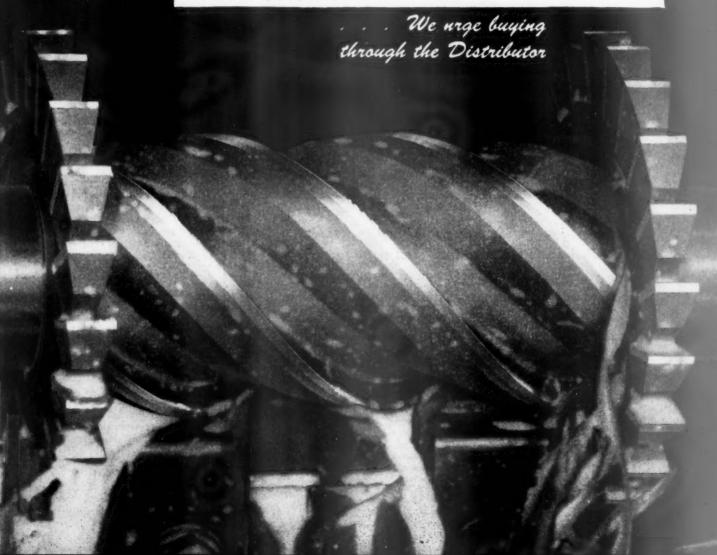
# WITH CUTTERS TS PRODUCTION THAT COUNTS—

... and Brown & Sharpe Cutters are outstanding for the High Production they deliver ... with minimum sharpenings ... and long cutter life.

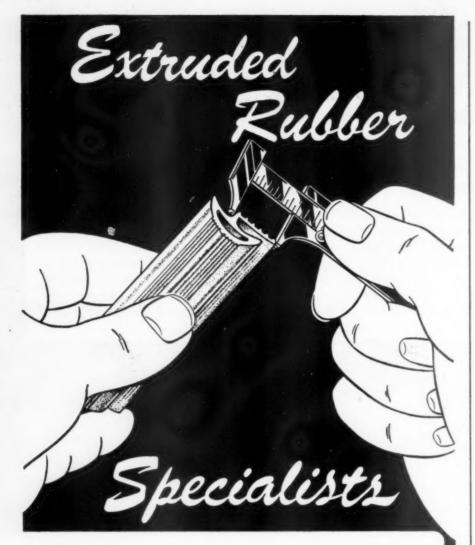
Brown & Sharpe designs, selected materials, scientific heat treatment and broad experience in cutter manufacture all contribute to the superior performance of Brown & Sharpe Cutters.

Fast machining rates . . . minimum sharpenings . . . accuracy where accuracy is essential . . . long cutter life . . . these are advantages Brown & Sharpe Cutters give you—advantages that count—in production.

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BROWN & SHARPE CUTTERS



ACCURATE measurement is one of many essential requirements in the successful manufacture of extruded rubber. Careful selection of material, proper testing for physical properties, and skillful workmanship must also be incorporated in every step of the processing. Continental is fully qualified by forty years' experience to furnish extruded rubber products to meet your most exacting requirements.

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Philadelphia, Pa. Pittsburgh, Pa. Rochester, N. Y. St. Louis, Mo. San Francisco, Cal. Syracuse, N. Y.

\* Continental also manufactures molded and lathe cut goods, as well as a complete line of hose, packing and other industrial maintenance items.

SEE OUR CATALOG IN SWEET'S



#### (Continued from page 200)

an object can be swung around easily for passage through narrow aisles or doors, or for positioning for finishing operations, or shipping. Illustration shows how this truck is used in transporting rough castings in a machine tool builder's plant.

The truck as developed by The Elwell-Parker Electric Co., Cleveland, can carry loads up to 3000 pounds. The boom is available in lengths of 72, 66 and 60 inches, from face of uprights. At lowest point the hook is 22 inches above floor level; at highest, 8 feet. The boom may be made interchangeable with a platform whereby a still greater variety of loads may be transported.

#### 1 1 1

#### GLASS REINFORCED PLASTIC TENSILE STRENGTH 76,000# PSI

A glass-reinforced plastic material that possesses greater strength than the structural metals, that won't corrode, that is dimensionally stable, and that can be fabricated without costly dies, was described by H. W. Collins, director of the research laboratories of Owens-Corning Fiberglas Corporation, at the annual meeting of the American Institute of Chemical Engineers in Chicago.

The paper, prepared jointly by Mr. Collins and Games Slayter, the Fiberglas Corporation's vice president in charge of research and development, told how, in an effort to develop a strong, lightweight material needed by the Army Air Forces, fine glass fibers were used to reinforce plastics much as steel rods are used to reinforce concrete. The result was a material widely used in military aircraft parts and equipment, and in other military applications. Many peace-time applications are foreseen, both in the construction of civilian aircraft and in other fields.

#### Can Produce Large Parts

Because the low-pressure resins used in combination with the glass fibers polymerize without giving off volatiles, it is possible to cure them in any desired shape merely by holding them in contact with the mold. This, said Mr. Collins, makes it possible for fabricators to produce very large parts — the whole top of a Pullman car or the hull of a boat, for instance — without the expense and physical limitations imposed by the use of high-pressure presses.

"It also means," said Mr. Collins, "the elimination of expensive dies and jigs, for since high pressures are not applied to the molds they can be of inexpensive construction. All this adds up to the fact that low-pressure, Fiberglas-reinforced plastics can simplify and lower the cost of making many parts, particularly large parts and those involving compound curves. They permit a frequency of design change that is uneconomic when there is a heavy investment in costly dies.

"The plastic industry now has a material that can be thought of in terms of the metals and their uses. Designers and

(Continued on page 204)

# nd SPECIALS by the

E FERRY CAP & SET



America's Best Looking Cap Screw Made of high carbon steel— AISI C-1038—to standards for full finished hexagon for full finished hexagon head cap screws. Heads com-pletely machined top and bottom. Hexagon faces clean notiom. Hexagon races clean cut, smooth and true, mirror finish. Carried in stock.



Heat Treated Black Satin Finish Made of high carbon steel—Made of high carbon steel—National C-1038. Furnished with black satin finish due to heat treatment. Hexagon heads diemade, not machined. Point manage. made, not machined. Point mamade, not machined. Point machine turned; flat and cham-fered. Tensile strength 130,000nereu, rensnestrength 130,000. 160,000 p.s.i. Carried in stock,



FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots top and bottom. Flat and cham-less burrs. Flat and chamfered machine point. Carried in stock. in stock.



FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots top and bottom. Flat and chamber of the machine point. Carried fered machine point. in stock.



SET SCREWS

Square head and headlesscup and oval point—case hardened. Carried in stock.

"SHINYLAND" STUDS All studs made steam-tight on

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered point. Nut end, oval point. Carried in stock.



"SHINYTHREADS" AIRCRAFT ENGINE STUDS

Made of highest aircraft qualmade of nignest aircraft quality alloy steel, finished to extremely close thread and body tremely close thread and body tolerance, with precision rolled threads—both straight and step types.



CONNECTING ROD BOLTS

Made of alloy steel-heat treated-threads rolled or cut -fnished to extremely close -inished to extremely close thread and body tolerances— body ground where specified.



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Case hardened to proper depth and ground to close tolerances. Thread end an nealed. Supplied in various neated. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.

VALVE TAPPET ADJUSTING SCREWS Hexagon head style-to

blueprint specifications— hexagon head hard; polished if specified—threads soft to close tolerance.



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There it is—you get guaranteed tool quality, you make sure of low tool cost, you take the problem out of tool buying—when you standardize on Celfor.

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Products of CLARK . TRANSMISSIONS . ELECTRIC STEEL CASTINGS AXLES FOR TRUCKS AND BUSES . AXLE HOUSINGS . BLIND RIVETS INDUSTRIAL TRUCKS AND TRACTORS . HIGH-SPEED DRILLS AND REAMERS METAL SPOKE WHEELS . GEARS AND FORGINGS . RAILWAY TRUCKS (Continued from page 202)

engineers are studying Fiberglas-plastics for such products as railroad car, bus, automobile and truck body parts; for boats and canoes, for luggage and furniture, for piping, for kitchen and bathroom assemblies and home appliances. Use of the material for civilian plane parts will be a natural transition from its use in war planes."

#### Directional Properties Attainable

The fact that the designer can obtain directional properties in glass-reinforced plastics is one of their marked advantages, according to Mr. Collins. If stresses to which the product will be subjected will occur in several directions it is possible to distribute the glass re-inforcing fibers in those directions, in proportion to the amount of stress in each direction. Or, if the principal stress will come from one direction, the glass fibers can be arranged in the direction of stress.

Strength properties attainable with glass-reinforced plastics are: tension, 76,000 pounds per square inch; compression, 68,000 pounds per square inch; flexure, 112,000 pounds per square inch; impact, 55 foot pounds per inch of notch; modulus of elasticity, 4,000,000 pounds per square inch.

#### SMALL-RUN PHENOLIC PLASTIC PRODUCT SERVICE

Small unit phenolic plastic molded products service on a low production basis of two to three thousands of a unit per year-enough to supply parts for



pre-production runs and salesmen's samples while a large production mold is under construction-is announced by Grayhill, 1 North Pulaski Road, Chicago

The company has developed technique of making low-cost single and twocavity molds, usually preferable to regular production molds in the first stages of producing sample products, due to possible need for alterations in design and mold changes. If preliminary parts of precision tolerance are needed, parts are machined to meet requirements. Molds for small quantity or pre-production samples have been made in as little as eight hours.

#### NEW SAFETY MATERIAL FURNISHED FREE BY HY-TEST

"Six weeks ago they called him Fleet-foot Charley", reads the ironical heading on one of the series of pay envelope in-(Continued on page 208)

Light Metals give your product new selling features!

# COLGATE

engineering • FABRICATING • ASSEMBLING o market faster, better, economically!

If the manufacture of your new or improved product has been interrupted by factors beyond your control, the urgency of getting it to market ahead of competition is of paramount importance. To secure immediate parts-production assistance and other benefits of sub-contracting service you will be interested in the comprehensive scope of COLGATE'S "Engineered Service."

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COLGATE'S complete and varied tooling and production facilities can be your "branch factory" — providing ample space, supplying specialized skills and know-how, planning shortcuts for fast, economical fabrication and assembling of parts to precision tolerances, and in addition offer modern straight-line techniques that replace slower and costlier methods. And, COLGATE can be depended upon to meet delivery dates.

As the first step towards producing your product better and economically, and getting it to market faster call on COLGATE now! Learn how "Engineered Service" helps solve your production problems and gives your product the sales creating features of the light metals. For immediate action wire or write, no obligation, complete confidence assured.

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COLGATE'S complete and centralized facilities include Hydraulic presses ranging from 10 to 750 ton capacity, other mechanical presses from 2½ to 200 ton capacity.

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AMITYVILLE, LONGINSLAND ... NEW YORK
LIGHT METALS PRODUCTS

APRI

The Right Container
The Products
For John 15 MULTIWALL
A BEN 15

Bemis Multiwall Paper Shipping Sacks give you an efficient, low-cost container for your products. Note these quality and service advantages:

Six Bemis Multiwall Plants are located at strategic points north, south, east, and west to facilitate delivery.

Materials for Bemis Multiwalls are carefully selected and laboratory tested before used in production. Sacks are rigidly inspected throughout all manufacturing processes.

Bemis Multiwall Specialists are at your service to help you solve packaging problems. Bemis representatives are located in 32 principal cities.

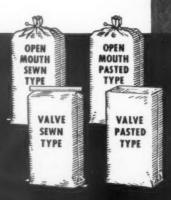
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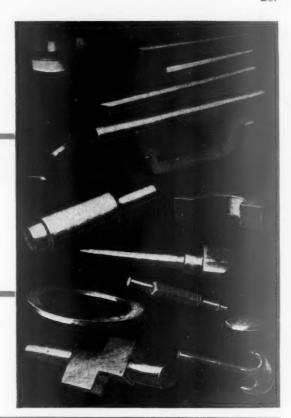


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#### FLAT DIE FORGINGS TO IMPROVE EVERY EQUIPMENT

#### **Better Performance**

Many machines and equipments can be improved to better withstand the abuse of constant service by the broader use of flat die forgings. The greater strength which only the forging process imparts to metals assures parts of ultimate ruggedness.



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Kropp Forge is able to offer immediate delivery of flat die forgings—in almost any size or quantity. There is no need to delay your production schedules by waiting for machine parts produced by other methods.

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Our production stocks of forging steels of various sizes and specifications are unusually large and complete—which gives further assurance of prompt production and shipment.

#### **Facilities**

Our fully equipped flat die department includes a large number of steam hammers, ranging from 1,000 to 14,000 pounds rating. Each hammer is equipped with one or more furnaces and a full complement of forging tools, including special tools designed by us for the production of what others term "impossible" flat die forgings.

#### Machining and Heat Treatment

We have complete, modern facilities for performing any type of heat treatment or machining operation that our customers may require. When you order forgings from Kropp, the forgings, machining and heat treatment can be included in the same order—complete production from a single source with undivided responsibility.

#### The Human Element

The veteran hammersmiths in our flat die department provide a full measure of the skill which has always figured prominently in the successful production of intricate flat die forgings.

#### Background

Since the beginning of this century, flat die forgings bearing the Diamond "K" mark have enjoyed an enviable reputation for quality and uniformity.



Contact your nearest Kropp engineering representative, or send blueprints direct for immediate quotation.

KROPP FORGE COMPANY 5301 W. Roosevelt Rd., Chicago 50, Ill.



For soft mallets and hammers, no other material has the *natural* protective qualities of tough, coiled rawhide. It protects finished surfaces, valuable machines and expensive dies . . . delivers maximum striking power and durability at the same time.

Fifty-eight years of experience in selecting, processing and seasoning mechanical rawhide is behind every Chicago Rawhide mallet and hammer. This is your assurance of a *rawhide* hammer or mallet that will stand up under severe, continuous blows — and still furnish maximum protection. Always specify *Chicago* Rawhide.

CHICAGO Rawhide MFG.CO.

1203 ELSTON AVENUE

CHICAGO 22, ILLINOIS

(Continued from page 204)

serts supplied this year by the makers of Hy-Test Safety Shoes as supplementary material for a plant's regular safety program.

On the envelope insert is one of twelve forceful safety messages prepared to impress workers with the danger and cost-liness of accidents. The little reminders are in convenient size to slip into pay envelopes, for handing out to workers at any time, or as "wrap ups" in plant stores.

The safety messages are spiced with interest-packed themes, such as: "Six weeks ago they called him Fleet-foot Charley", "It wouldn't be an accident if you know when and where it was going to happen", and "A little spent for safety shoes now may save you many dollars later".

On the opposite side of the inserts are miniature reproductions of the large safety rosters also furnished without charge by Hy-Test for plant bulletin boards.

Safety directors and plant managers can obtain these inserts by writing the Hy-Test company stating how many are needed for each month. Companies are asked to send in their requests now so their names will be on the mailing list in time for the first of the regular mailings. It is furnished free as a contribution to America's safety efforts. Write Hy-Test Division, International Shoe Company, St. Louis, 3, Mo.

#### NEW G-E PLASTIC IMPROVES IN HEAT TEST

After one week's baking over a hot oven, General Electric's new chemical recipe, silicone glass laminate, keeps getting better and better, reports the Chemical Department.

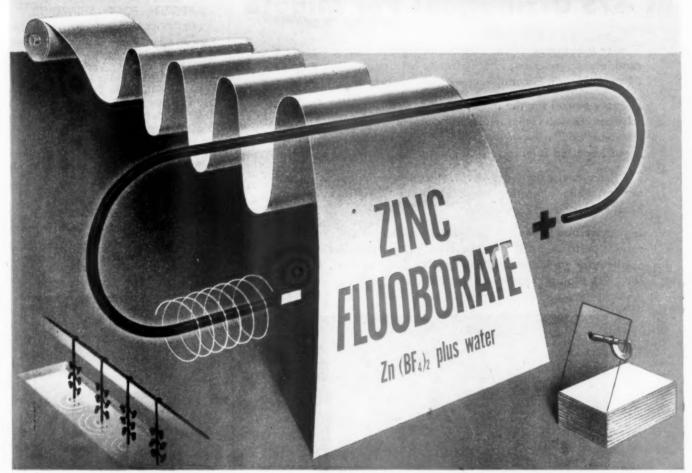
The new plastic has far surpassed any similar product by withstanding the week-long test at 250 degrees. More unusual is that both the mechanical and electrical properties of the laminate grow better each day. Pointing out that any other plastic laminate would deteriorate under such conditions long before the new member of the silicone family, G-E chemists have plans for still more severe heat tests.

Constructed of layers of glass cloth treated with a silicone resin and subjected to heat and pressure, the laminate is so resistant to heat that whole new areas in the electrical insulation field may be opened. According to Dr. J. J. Pyle, director of the laboratory, ordinary solder will melt before this new insulating material will break down under heat.

Many uses for silicone glass laminates are being found in such electrical equipment as motors, circuit breakers, induction heaters, high frequency oscillators and other electrical and electronic equipment. Other uses may include handles for arc welding electrodes and for indestructible insulating parts for devices subject to fire hazards.

(Continued on page 210)

#### General Chemical Presents



#### THE NEW APPROACH TO ZINC PLATING

The Attention of zinc platers everywhere focuses today on General Chemical Zinc Fluoborate Solution, for this new electroplating chemical gives promise of being far superior to present commercial baths in many strip and tank applications.

For continuous plating of wire, cable, strip or sheet, Zinc Fluoborate is the "chemical of tomorrow." It demonstrates properties of high conductivity, high current density and ease of control so necessary to efficient and economical strip plating operations.

In addition, Zinc Fluoborate is proving particularly adaptable to tank or barrel plating of malleable and cast iron castings, since it gives excellent adherence and uniform coverage together with a lustrous

General Chemical Fluorine Division has prepared operating data sheets on Zinc Fluoborate, which are of interest to every zinc plater. For copies of this useful material and for full information on experimental and commercial quantities of Zinc Fluoborate, contact the nearest General Chemical Sales and Technical Service Office below or write General Chemical Company, Fluorine Division, 40 Rector Street, New York 6, N. Y.

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK 6, N. Y.

Sales and Technical Service Offices: Atlanta \* Baltimore \* Boston Bridgeport (Conn.) \* Buffalo \* Charlotte (N. C.) \* Chicago Cleveland \* Denver \* Detroit \* Houston \* Kansas City \* Los Angeles \* Minneapolis \* New York \* Philadelphia \* Pittsburgh Providence (R. I.) \* San Francisco \* Seattle \* St. Louis Utica (N. Y.) \* Wenatchee & Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited Montreal \* Toronto \* Vancouver\*

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Valuable booklet . . . General Chemical Tech Fluoborates, as well as other special data on many of the products listed below, now available. Write about those that interest you.

#### GENERAL CHEMICAL METAL FLUORORATE SOLUTIONS

Cadmium Fluoborate, Solution Chromium Fluoborate, Solution Cobalt Fluoborate, Solution Copper Fluoborate, Solution Ferrous Fluoborate, Solution Indium Fluoborate, Solution Lead Fluoborate, Solution Manganese Fluoborate, Solution Mercuric Fluoborate, Solution Nickel Fluoborate, Solution Silver Fluoborate, Solution Stannous (Tin) Fluoborate, Solution Zinc Fluoborate Solution

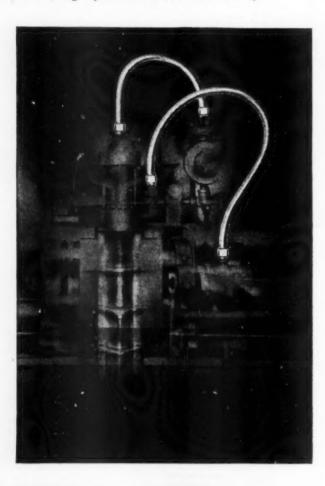
# PRESSURE-TIGHT PERFORMANCE FOR YEARS at 475 Oscillations Per Minute

You're looking at Titeflex all-metal, flexible tubing serving a double purpose. First, as a hydraulic oil line supplying up to 75 pounds p.s.i. Second, as the exhaust return line.

Primary reason for the use of Titeflex in this out-of-the-ordinary installation is that its inherent pressure tightness—despite constant oscillation—prevents the line leakage that would mean impaired operating efficiency... work spoilage.

Titeflex likewise provides identical trouble-free protection and service while operating under constant vibration, pressure, heat, cold, or corrosive attack.

If you are not already aware of the economies and increased service performance that stem from Titeflex installations, our application engineers will gladly give you the facts. Titeflex, Inc., 533 Frelinghuysen Avenue, Newark, N. J.



# Titeflex

THE ALL-METAL FLEXIBLE TUBING
THAT STAYS TIGHT

(Continued from page 208)

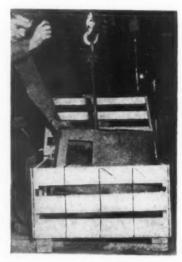
Although heavy for plastics, this material weighs about the same as magnesium.

#### FIBERGLAS BLANKETS FOR FROZEN FOOD SHIPMENTS

A new line of blankets made with Fiberglas interlining is being produced by Aeronautical Supplies, Inc., Empire State Building, New York City, for the transportation of frozen foods by freight or by truck. Duck or Vinyl-coated styles are available with waterproof linings. The Fiberglas insulated blankets are said to offer a perfect solution for the problem of shipping frozen foods in less than carload lots or for delivering them from the warehouse when refrigerated trucks are not available.

#### WIREBOUND CRATES REDUCE LOSSES, LOWER COSTS

The adoption of wirebound crates for boiler parts by Weil McLain Company, Michigan City, Ind., has reduced ship-



29½ lb. crate reduces damage losses.

ping damage losses 50 per cent and shipping costs 25 per cent, R. H. Hibner, industrial engineer for the company, informed the Wirebound Box Manufacturers Association.

Although much lighter in weight than the former type of containers used, the wirebounds have proved three times as strong, and the skillful use of wire gives them a resiliency that enables a product to take greater shock in shipping, Hibner explained. This has reduced damage to a minimum.

The use of wirebounds in the plant moreover has effected great savings in time, labor, material and storage space, thus accounting for the reduced shipping costs.

Shipping weights have been reduced as much as 75 per cent. For example, an old-type container used for shipping a 28-inch ash pit had a tare weight of 120 pounds plus 70 pounds of shavings. The new wirebound crate is scientifically engineered to weigh only 42 pounds and needs no shavings whatsoever.

frame,
filler,
fabric,

FASTENINGS
quality all the way!

In upholstered furniture, design and covering attract but sound construction sells and satisfies. Twin-Fast's four major improvements help assure tighter assemblies as well as more efficient assembly lines. That means a boost in quality and quantity of furniture output to meet the demands of today's great, growing market.

Whether you make upholstered pieces or pianos, chests or chairs, coffee tables or radio cabinets, your new lines can profit by this modern fastening. Test Twin-Fast Screws in your own plant now. Just write for samples.

Twin-Fast Screws come in steel or brass with round, flat or oval heads.

Patents 2,314,390; 2,314,391; 2,373,878; 2,373,948 \* Canadian Patents 500,695; 500,696 \* Other Pats. Pending

FOR FASTER PRODUCTION - STRONGER CONSTRUCTION PRODUCTION - STRONGER CONSTRUCTION FOR FASTER PRODUCTION - STRONGER CONSTRUCTION THREAD WOOD SCREWS

TWIN THREAD WOOD SCREWS

FURNITURE MAKERS, CHECK
THESE TWIN-FAST FEATURES—

RELIEVED SHANK DIAMETER:
prevents stresses which might
cause immediate or eventual
splitting or fissures.

RELIEVED SHANK DIAMETER

TWIN, PARALLEL THREADS provide twice the thread pitch of ordinary screws. Driving time and costs are cut in half!

TWIN, PARALLEL THREADS

CYLINDRICAL CONSTRUCTION (not tapered) increases thread area for tighter seating, greater holding power. Often fewer, shorter screws may be used.

CYLINDRICAL CONSTRUCTION

SINGLE, SHARP, CENTERED POINT where twin threads terminate assures quick starting, self-centering, balanced driving. No eccentric "crawling"—no misalignment!

SINGLE, SHARP, CENTERED POINT

The Blake & Johnson Company makes many thousands of fastening devices in all standard metals.

THE BLAKE & JOHNSON COMPANY (Since 1849)

WATERVILLE, CONNECTICUT

# Among the ASSOCIATIONS

#### Washington Celebrates "President's Night"

Purchasing Agents Paid High Tribute by Governmental and National Officers at Unusually Large Gathering

More than 125 members and guests were present at the "President's Night" meeting of the Purchasing Agents Association of Washington, in honor of President Charles L. Sheldon of the National Assn., which was held in the East Room of the Mayflower Hotel, Tuesday, March 12th.

President Sheldon was welcomed to Washington by Colonel Joseph D. Arthur, Jr., Senior Assistant to Engineering Commissioner, who presented Mr. Sheldon with a Key to the City, which, Mr. Sheldon casually opined, plus \$2.00 would

stupendous problems to be solved.

One of the highlights of the meeting was a fine tribute paid to the men and women of purchasing "who helped make possible the most impressive record of production the world has thus far seen" and who face equally important responsibilities in the reconversion period, by John W. Snyder, Director of War Mobilization and Reconversion. Important developments made it impossible for Mr. Snyder to attend the meeting, and his prepared statement was read by President Grey Leslie. Mr. Leslie also read short

Left to right: E. P. Scully, Roland M. Brennan; K. H. Wang, Head Commissioner China Supply Commission; C. M. Sheldon, President, N.A.P.A.; H. L. Woo, Chinese Minister of Communications; and E. W. Ely, Principal Engineer National Bureau of Standards.

offset a traffic violation. President Grey Leslie introduced guests, past presidents of the association and President Margaret Byrne of the Women's Division of the Washington Association which was well represented at the meeting. Among the guests present were Hon. J. Howard McGrath, United States Solicitor General and former governor of Rhode Island, and Joseph I. Kitchin of Philadelphia, who was introduced as one of the forefathers of the local association. Past presidents present were National Director E. P. Scully, Clifton E. Mack, and Jack Kurtz. Russell Miller, former president, whose unexpired term of office was taken over by Grey Leslie, is now in Texas

The introductions were followed by a talk by Roy S. Hendrickson, Deputy Director General of U. N. R. R. A., who reviewed UNRA requirements and the statements by Chester Bowles, Office of Economic Stabilization, and John D Small of the Civilian Production Administration.

National Director E. P. Scully next introduced Executive Secretary George A. Renard of the National Association. Mr. Renard paid tribute to the women's division of the association, stating they "have a very bright future ahead of them." He also stated that some of the He also stated that some of the finest leadership in Purchasing has come from the Washington local and other associations and the Eighth District. Commenting on the economic situation he said that there are two major factors that create inflation - one is abundance of purchasing power, and the other shortage of material. We have an abundance of purchasing power, he said, and "it may burn holes in our pockets and holes in our future." He emphasized that shortage of (Continued on page 214)

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#### N. A. P. A.

31st ANNUAL
CONVENTION
and
INFORM-A-SHOW
May 27, 28, and 29
Stevens Hotel
CHICAGO

Hotels will not release rooms except upon authorization of the N. A. P. A.

Registration form, which includes hotel reservation application, is available from secretary of your local association.

#### EDUCATIONAL BUYERS TO HOLD NATIONAL CONVENTION IN CHICAGO MAY 1-4

The Educational Buyers Association will hold its National Convention on May 1, 2, 3, and 4, 1946, at the Edgewater Beach Hotel in Chicago. The meeting marks the association's silver anniversary, and officers and committees are making every effort to provide an outstanding program. In fact, the program will represent two years' of planning as no convention was held in 1945. The theme of the meeting is "What's New." Among the headliners on the program are Dr. J. S. Long, director of research. Devoe and Reynolds Company; Thurman Sensin, Research director of Southern States Industrial Council, and George A. Renard, executive secretary of the N. A. P. A.

J. Fred Knight, University of Illinois, 1853 West Polk St., Chicago, is chairman of the Chicago Host Committee. Other members are Harvey Anderson, Illinois Institute of Technology; H. B. Bentsen, George Williams College; Gilbert A. Force, Northwestern University; John A. Pond, University of Chicago; and George E. Potts, McCormick Theological Seminary.



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Philco "Thirty" Industrial

Truck Storage Battery gives 30% lenger life and is identified

by its distinctive red connectors.

Tune in The Radio Hall of Fame, with Paul Whiteman and His Orchestra, Sundays, 6 P. M., EST; The Breakfast Club with Don McNeill, 9:45 A. M., EST, Monday through Friday - ABC (Blue) Network (Coast to Coast).

#### MODERN ELECTRIC INDUSTRIAL TRUCKS POWERED BY COST-SAVING PHILCO "THIRTY"

Now you can get the kind of industrial trucks experience has proved the safest, most flexible and maintenance-free-ELECTRIC TRUCKS! And you can power your trucks with the greatest materials handling development since the fork-lift truck, itself-PHILCO "THIRTY", the Storage Battery with 30% longer life! Plan now for the big demands increasing production will place on your materials handling equipment. Philco "Thirty" will give your trucks top capacity, plus savings in maintenance, depreciation and replacements. Write today for new catalogs giving specifications.

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• Twenty-five years of specializing in the production of Special Washers and Small Stampings make it easy for us to solve your problems in this field. More than 10,000 sets of tools are ready to produce the washers and stampings you desire. Our expert Tool and Die Department is also ready to help—if none of the present sets of tools can give you what you want.

Special Washers and Small Stampings are available from steel, brass, copper and other metals. Just send your blueprints or specifications to us.

Also a full line of Standard Washers in kegs or cartons. U. S. S. Washers • S. A. E. Washers Riveting Burrs • Square Washers Expansion Plugs • Aircraft Washers

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MASTER PRODUCTS
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6400 PARK AVE. - CLEVELAND 5. OHIO

(Continued from page 212)

materials for production presented a serious problem. "We are facing both barrels of this economic dynamite," he said, "and the next six months will be the most difficult that purchasing people have ever known.

"They must keep their eyes on costs and keep their expenses down. They must "brief" their future activities and have an



President Grey Leslie of The Washington Association.

"emergency landing field" ready for use." Commenting on escalator clauses, he said that purchasing agents must provide an anchor and escape clauses to protect themselves. "Plan your activities carefully," he said, "and bear in mind that any kind of plan always wins against no plan — but have a plan for your program and follow it." He also stated that a surprising percentage of purchasing men are beginning to lose faith in the theory of price control, and that many would rather take a chance on the open market. He stated that a Price Adjustment Board would create confidence and the production that we should have.

President Sheldon of the National Association was next introduced by Mr. Scully. Stating that all men in purchas-



Officers of the Women's Division of the Washington Association: Miss H. M. Lorenzen, vice president, Miss Margaret M. Byrne, president; Miss H. T. Walker, secretary.

ing can take pride in their record of accomplishment during the war, Mr. Sheldon expressed the wish "that the job of purchasing were as easy as during wartime," saying that "we have a real task to keep our factories running." He also said that "while we have all been in favor of price control, many feel that the OPA acts too slowly in making price changes where they are necessary.

"In the past few years our job has been to get the goods and keep the wheels turning," he continued. "We have been careless about quality and other factors. Soon we will be in the new era, and then we must return to the basic principles of purchasing — quality, service and price.

"The Purchasing Agent is in strategic position to assist other departments," he said. "There is a right way and a wrong way to do this. The wrong way is for purchasing agents to buy only when they are asked to buy. The right way is the ability to make suggestions as to new materials, new processes and new equipment, and to keep abreast of the new developments; and, to quickly dispose of obsolete materials.

"We purchasing agents should not keep our heads under blankets, so to speak. I do not think we should be 'tooting our own horn', but I do know that management is interested in what we are accomplishing. The lessons that we learned during the war will stand us in good stead in the days to come."

At the conclusion of his talk President Sheldon was presented with a souvenir of his Washington visit entitled "A Manual on the Origin and Development of Washington", by Miss Margaret Byrne, president of the local women's group, on behalf of the Washington Association.

#### COUNCIL OF DISTRICT NO. 7 PLANS FALL MEETING

The Council of District No. 7, N. A. P. A., voted at the fall meeting in Tampa to resume the annual meetings of members of the purchasing agent associations located in District No. 7, which were suspended during the war years, and accepted an invitation of the Alabama Association to hold the first postwar meeting in Birmingham in the fall of 1946.

A District Activities Committee of which Harlan E. Cross of the Alabama Association is chairman, includes a representative from each of the District No. 7 associations. The Third Annual Conference is scheduled for October 10th and 11th, at the Thomas Jefferson Hotel, Birmingham. Local committees have been appointed and programs are under study. A separate general topic is planned for each business session, that for the first session being "Southern Progress Through Purchasing"; for the second, "Current Purchasing Problems"; and third, "Looking Ahead in the Field of Purchasing."

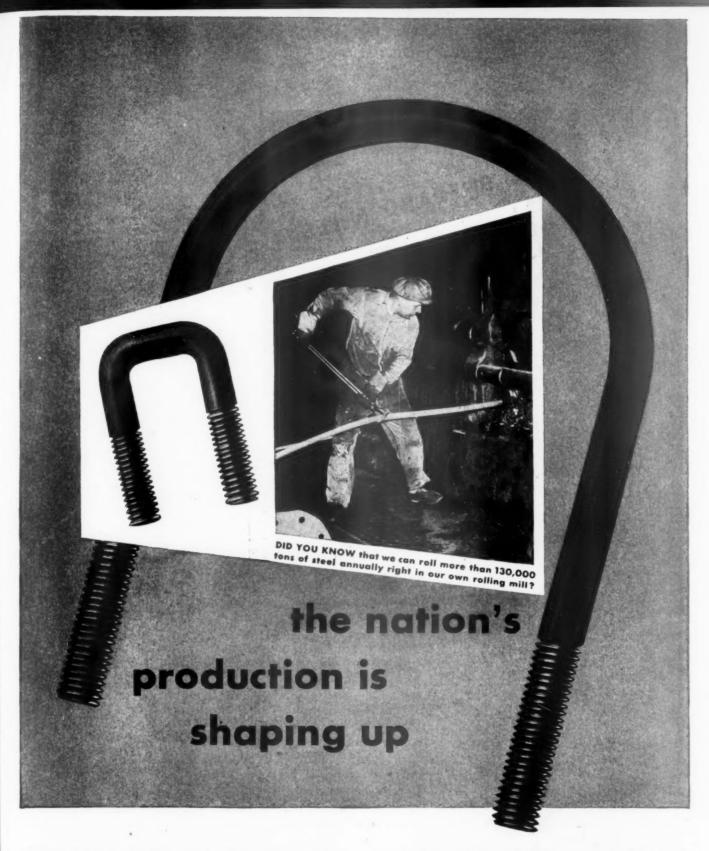
George H. Cole, Alabama Power Co., Birmingham. Ala., is general chairman of the Third Annual Conference.

#### "GETTING PAST PURCHASING AGENT" SEATTLE MEETING

B. F. Curtis, purchasing agent, Puget Sound Machinery Depot, discussed the subject "Getting Past the Purchasing Agent" at the March 14th meeting of the Purchasing Agents Association of Washington, at the Washington Athletic Club, Seattle. There was also a talk on "Personal Evaluation" by Dr. George W. Allison, economist, Puget Sound Light & Power Company, and a showing of the

(Continued on page 216)

Our converse and Aire cle (



Our nation's industries are in the process of reconversion to a peacetime operation of manufactured "miracles"..."miracles" which call for nuts and bolts of unusual design.

Already thousands upon thousands of special circle (B) fasteners are being produced at our plant—the largest independent in the country—for progressive manufacturers everywhere.

Years of experience plus the fact that all circle (B) fasteners are controlled from billet to bolt in one single plant, naturally make the Buffalo Bolt Company the logical starting point for any producer with an unusual nut or bolt problem.

Whether they are standard or special, all circle B products have the same uniform, controlled quality that serves to make your production more efficient.



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Y popular demand - Shepard B Niles developed a lightweight hoist that has all the features and advantages you have come to expect of load lifting equipment. Every detail of construction has been thoroughly tested, every condition of performance proved. Built to give dependable load handling service, the new LiftAbout, Jr. assures you of long durable service with a minimum investment and maintenance cost.

You are invited to visit our booth, number 1112, at the

#### **GOLDEN JUBILEE FOUNDRY SHOW** Cleveland, May 6th to 10th

and see the new LiftAbout, Jr. in action

Write today for bulletin giving complete particulars about the new lightweight LiftAbout, Jr.

CRANE & HOIST CORPORATION

MONTOUR FALLS, N. Y.

(Continued from page 214)

sound-moving picture "Carbon Black Treasure" by F. M. Lamson, Seattle representative of the National Carbon Com-

Preceding the dinner meeting, Russell Wetherell, purchasing agent, presided at an educational forum, with Don Mackenzie, professor of marketing, University of Washington as moderator. The subject was "How to Strengthen the Relation Between Purchasing and Engineering — Production." Cases from Howard T. Lewis' book on "Selected Cases in Industrial Purchasing" were briefed by E. A. Schlueter, Northern District purchasing agent, Standard Oil Co. of California. The discussion was led by E. A. Westfall, purchasing agent, Stetson Ross Machine Co., and E. A. Hurley, purchasing agent, Western Blower Company.

#### PHILADELPHIA'S MARCH MEETING **OUTSTANDING SUCCESS**

Over 1000 members and friends of the Purchasing Agents Association of Philadelphia were in attendance at the Tenth Annual Meeting of that body at the Bellevue-Stratford Hotel on Thursday evening, March 14th.

The March meeting has become a tradition of the Philadelphia Association as it marks the date of the association's annual industrial products exhibit. The attendance at the meetings has increased from year to year.

Speaker of the evening was Robert St. John, well known radio personality, war correspondent, and author. His talk dealt with the possibility of and the implications of what he termed World War III. He expressed his displeasure with what he termed "war mongering" by persons in high places, pointing out that the next world war would cause this country to be devastated together with

enormous casualties among its citizens. President W. L. Thompson of the Philadelphia association presided at the meeting, which was in charge of William F. Hoffman, chairman. Among the out-of-town guests were President C. O. Richards and Secretary-Treasurer K. W. Shook of the Purchasing Agents Association of the Lehigh Valley; President Harold W. Macintosh and Executive Secretary J. H. Leonard of the Purchasing Agents Association of New York; President C. G. Lukens and Secretary T. C. Fleming of the Reading Association, and Purchasing Agents President A. H. Schultz and Treasurer Wm. J. Young of the Purchasing Agents Association of Baltimore.

#### OBSERVATIONS IN GERMANY ST. LOUIS MEETING

Deviating from the usual discussion of matters pertaining to purchasing and business in general, members of the Purchasing Agents Association of St. Louis, Mo., listened to an interesting talk by

(Continued on page 220)

Gearing, bearings and mechanical load brake automatically lubricated by single oil reservoir. ANTIFRICTION BEARINGS

ONE POINT LUBRICATION-

insure long life and positive con-

PLUGGING LIMIT
SWITCH—Should the load
block over-drift, to prevent posblock over-drift, to prevent posswitch will automatically estabswitch will automate of travel.

The driving pinion drives a train of alloy steel gearing at points diametrically opposite, thus

points trametricary opposite, trus balancing all stresses. Balanced drive assures smooth operation

and long life under constant load

BALANCED DRIVE

interlock.

PLUGGING LIMIT

of travel.

equipped with oversize magnets, silver-tipped contacts, and contactors with mechanical

-Highest grade antifriction bearings are used throughout.

FULLY ENCLOSED-Operating mechanism sealed in cylindrical hoist frame-free from dust, moisture and fumes.

ALLOY STEEL GEARING-Heat-treated, machine cut from forged alloy steel.

462 SCHUYLER AVE.



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A very large number of the improvements in design, construction and manufacture, responsible for today's high efficiency of modern high speed cutting tools have been pioneered by Standard.

The use of high speed steel in drill construction is one of the most important of such Standard developments.

The method of welding a high speed steel barrel to a carbon steel shank is another Standard development that contributed to the present reasonable cost of high speed steel drills.

Result, we have enjoyed for 65 years a constantly increasing patronage from America's leading industries.

A wealth of experience gained through these 65 years in meeting tough drilling, reaming, milling and tapping problems is at the disposal of users of our products, without cost or obligation. Let us work with you on your tough jobs. Write

Red Shield Brand
TWIST DRILLS
REAMERS
MILLING CUTTERS
TAPS - DIES
SPECIAL TOOLS

# THE STANDARD TOOL CO.

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WITH STANDARD DRILLS

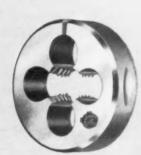
UR stock of over 10,000 items provides the right drill, reamer, cutter, tap or die for each job.

 Unequalled manufacturing experience provides utmost uniformity in construction and performance.

Our distribution, through leading Mill Supply Distributors, from coast to coast, provides prompt adequate service to all users.

Superior service and superior performance are two direct benefits gained by Standardizing on Standard Shield Brand Tools.







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CLEVELAND

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Stainless fittings are just as easy to get as stainless pipe—from Frasse. In addition to a complete range of types 304, 316, 347 seamless and welded *pipe*, Frasse keeps a fat stock of stainless *fittings* handy, too.

Elbows, tees, couplings, nipples, bushings, unions and similar screwed fittings can be furnished from Frasse warehouse *at once*. Stock standard is type 304, 150 pounds W.P... other analyses and special fittings can be shipped on short notice. Valves, too, are quickly available in standard gate and globe, type 304.

Whatever you build of stainless, you'll find Frasse a quick source—not only for bars, sheet, tubes and pipe, but accessories as well. It's easy . . . more convenient . . . to get all your stainless from Frasse. Call Peter A. Frasse and Co., Inc. 17 Grand St., New York 13, N.Y. (Walker 5-2200) 3911 Wissahickon Ave., Philadelphia 29, Pa. (Radcliff 7100) 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) Jersey City • Hartford • Rochester • Syracuse • Baltimore

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BARS Types 302, 303 316, 347	SHEETS Types 302, 304 316, 347	PLATES Type 304	STRIP Type 302
ANGLES Type 304	<b>TUBING Types</b> 304, 316	PIPE Types 304, 316 347	WIRE Type 302

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Despite the tremendous demand for "Duet" we are finally caught up due to further production expansion. Thanks for your past forebearance.



Owing to AMAZING AMOUNT of WATER it HOLDS, "DUET" can be used as a Sponge ... or wrung out tightly, like a Chamois.

Ideal for HEAVY DUTY work in industry. CANNOT UNRAVEL. Each thread locked by a hidden stitch. EXTRA DENSE, long-wearing surface. SAVES MONEY. Used dry its dense surface picks up dust like a magnet.

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AMERICAN SPONGE & CHAMOIS CO., Inc.
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245 MISSION STREET, SAN FRANCISCO 5

Producers of

AMSCO CHAMOIS and MERMAID SPONGES
EST. 1869

DEMAND BY BRAND

(Continued from page 216)

Roy S. Glasgow, head of the electrical engineering department, Washington University, on the subject "Some Observations in Germany." During the war Mr. Glasgow directed a combined Civilian and Military Commission for the purpose of ferreting out and analyzing Germany's scientific and technological formulae and methods.

# ROCHESTER INDUSTRIAL BUYERS DISCUSS QUALITY CONTROL

"Quality Control as Performed at the Bausch & Lomb Company" was the subject of interesting panel discussion by Richard H. Eisenhart, Divisional Chief Inspector, Edward R. Close, Chief Parts Inspector, and Joseph C. Warren, Head Receiving Department Inspector (all of the Bausch & Lomb Co.,) at the February 15th meeting of the Rochester Association of Industrial Buyers, at the Chamber of Commerce, Rochester, N. Y.

The three speakers collaborated throughout the discussion, pointing out that Quality Control was not to be confused with Inspection. The function of Quality Control, it was pointed out, is to stop a part while in the process of manufacture if it is not to specification, thereby saving time and material in event it is necessary to reject completed work.

An interesting chart was presented symbolizing the process of quality control inspection. The pavement representing the course to follow, the shoulders being the caution area, and the guardrail the danger area. Production, for instance, would follow the pavement area, allowable tolerances coming within the shoulders or caution area, parts being

acceptable if tolerances varied to that area. However, if parts deviated from the specification so as to enter the danger area, it would be necessary to reject them.

Mr. Warren explained how receiving inspection had saved considerable money by singling out and rejecting defective parts before they reached the production line.

Of much interest were charts showing the average percentage of rejections of each type of material received from various vendors, which made it possible for the Purchasing Department to keep a check on the dependability of suppliers as demonstrated by their respective ratios of rejected parts over a period of time. A plan for inspection was also outlined.

President Mortimer H. Maier appointed a nominating committee consisting of John Garcia, Hawk-Eye Works; Bud Tanner of I. B. M., and Harold Day of the Bausch & Lomb Company.

## NEW YORK RESUMES ANNUAL PURCHASING-SALES DINNER

After a five year interruption due to the war, the Purchasing Agents Association of New York resumed its Annual Purchasing-Sales Dinner the evening of March 20th, with an unusually successful meeting at the Commodore Hotel, New York. Headline speaker for the affair was Eric Johnston, president of the United States Chamber of Commerce and president of the Motion Picture Association. The theme of the meeting was the industrial outlook for the immediate years ahead. Executive Secretary

(Continued on page 222)



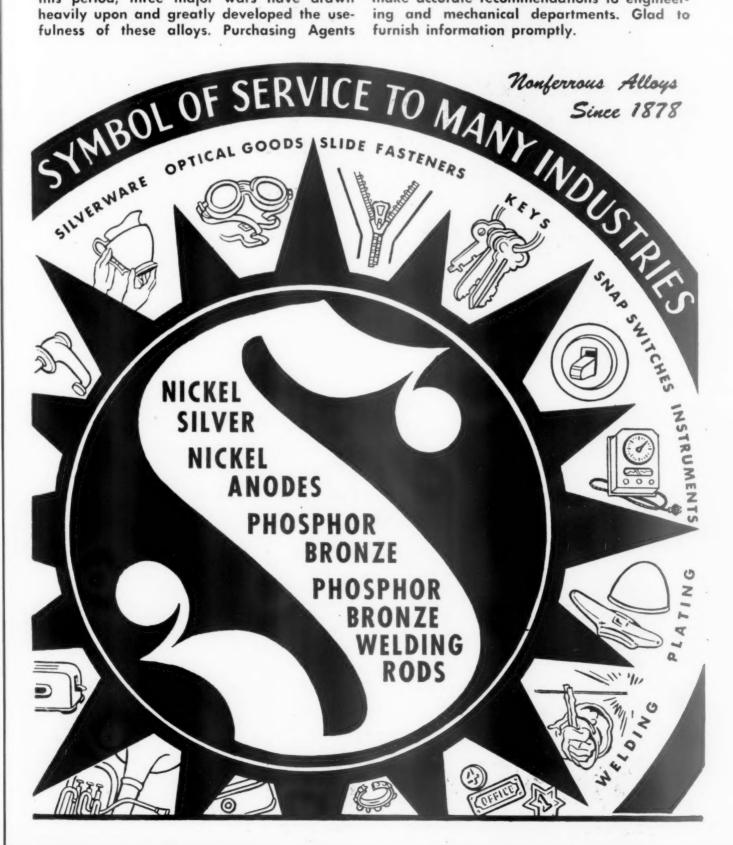
NEW OFFICERS OF THE TWIN CITY ASSOCIATION

Recently elected officers of the Twin City Association of Purchasing Agents, St. Paul and Minneapolis, are left to right, seated: Paul E. Cross, national director (Waterman-Waterbury Co., Minneapolis); L. S. Clark, president (Twin City Hardwood Lumber Co., St. Paul)); and H. E. Hildebrandt, vice president (Nutting Truck & Caster Co., Faribault). Standing: H. C. Powell, director (Minnesota Mining & Mfg. Co., St. Paul); R. A. Nentwig, director (Superior Metal Products Co., St. Paul); N. A. Westhoff, director B. F. Nelson Mfg. Co., Minneapolis); G. R. Arneson, director (City of Minneapolis); and Basil N. Nelson, secretary-treasurer (Northern States Power Co., St. Paul).

# THE SEYMOUR MANUFACTURING CO.

In the 65 years that "Seymour" has manufactured nonferrous alloys, service has reached practically every metal working industry. In this period, three major wars have drawn heavily upon and greatly developed the use-

should revise their records to include them as major elements of product design, and study their characteristics so as to be able to make accurate recommendations to engineering and mechanical departments. Glad to



APR

(Continued from page 220)

George A. Renard of the N.A.P.A. presented Purchasing's viewpoint. Harold W. Macintosh of L. O. Koven & Bro., Inc., president of the New York association, presided at the dinner, and Harold K. LaRowe of the American Cyanamid Company and subsidiaries acted as toast-master.

# 1 1 1 START EDUCATIONAL COURSE SAN FRANCISCO

The Educational Committee of the Purchasing Agents Association of Northern California, started its 1946 course in Principles and Practices of Purchasing in January, at the Merchants Exchange Building, San Francisco. The course covers a period of 10 weeks and is under the direction of Professor Royal A. Roberts of the School of Business Administration, University of California, Berkeley. Following is the lecture subject matter:

January 29—1. "Organization of the Purchasing Department"

February 5-2. "Purchasing Procedure"

February 14—3. "Principles of Capitalism, Socialism, and Communism as They Affect Business"

February 19—4. "The Value of Research, Reports, and Business English to the Purchasing Agent"

to the Purchasing Agent"
February 26—5. "The Forces Which Affect Price Policy"

March 5-6. "Top Management and Personnel"

March 12-7. "Materials, Supply, Salvage, and Storage"

March 19—8. "Advertising and Salesmanship as Aids to Purchasing"

March 26-9. "Variations in Purchasing Conditions"

April 2-10. "Economic Trends and Business Fluctuations."

# DEVELOPMENT OF LIGHTING CANTON ASSOCIATION

"The History and Development of Lighting" was the subject of a talk by William Lightbody of The Ohio Power Company at meeting of the Canton Association held in the Elks' Club on February 20th. The high spots of the development of controlled lighting from its earliest periods to the present were explained and demonstrated in a very interesting manner by Mr. Lightbody. This covered the earliest lighting by candles or flares to the use of electric lights of as high as 5000 watts, although the largest lamp displayed was one of 5000 watts. Other developments in lighting from the so called "grain of wheat lamp" used in bronchoscophy as well as germicidal lamps, black light etc., were explained and demonstrated. Mr. Lightbody predicted further improvements in home and industrial lighting in the immediate future.

Fifty members and guests were present for the meeting with a good per-

(Continued on page 224)



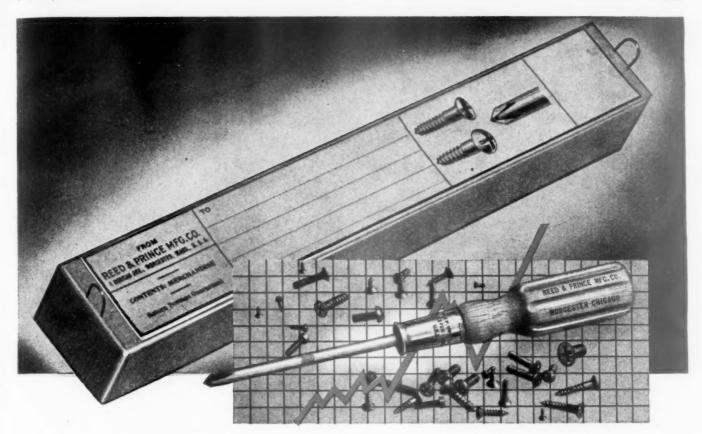
Fillister, Button and Hex Heads. You can't go wrong buying TRIPLEX for Toughness.

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5331 GRANT AVENUE . CLEVELAND 5, OHIO

THE ADED
FASTENERS
CAP AND SET SCREWS - BOLTS, NUTS AND RIVETS



# here's an example of ...





The Reed & Prince Recessed Head Screws with their close tolerance, easier application and steady bite for any size driver, represent a superior type of production screw — built for assembly line speed — selling on sight.

To get this screw driver and a supply of assorted screws into the hands of the production man, Reed & Prince depend on the Mason MailMaster — that sturdy, lightweight container which is America's number one mailing box. Perhaps your product needs sampling — why not investigate possibilities with Mason MailMasters. Write today for the new catalogue showing the entire line of Mason MailMasters. Write The Mason Box Company, Dept. (21), Attleboro Falls, Massachusetts.

# The MASON BOX COMPANY

MANUFACTURERS OF AMERICA'S NUMBER ONE BOX . . . THE MASON MAILMASTER



N most large-scale production plants mechanical transportation of materials in process is replacing costly, cumbersome, laborious manual methods. The result: greater production, better working conditions, fewer accidents, reduced costs.

In outdoor extractive industries and in factories, Thermoid has contributed to this progress through the development of conveyor belting to meet the special requirements of different companies. Consultation with a Thermoid representative may develop ways to help you improve processes and reduce costs.

Since 1880, in problems involving hose, belting and friction materials, industrialists have found it's good business to do business with Thermoid.

THE THERMOID LINE INCLUDES: Transmission Belting • V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products • Molded Hard Rubber and Plastic Products.



Contributor to Industrial Advancement Since 1880

(Continued from page 222)

centage of members attending. President M. J. Birzer, Jr., conducted the meeting. New members of the Association in oduced were: R. C. Cole, purchasing gent of Ohio Ferro-Alloys Corp., Canton, and R. A. DeCorps of Spun Steel Corp., Canton.

Members were urged to make early reservations for registration and rooms at the National Convention scheduled for May 27, 28 and 29 at the Stevens Hotel, Chicago, blanks for this purpose being in the hands of the local secretary.

# TRI-CITY CONCLAVE AT SYRACUSE, N. Y.

Purchasing Agents Associations of Syracuse, Elmira and Rochester, N. Y., held a joint meeting at Syracuse on March 27th, at which President Charles L. Sheldon of the National Association of Purchasing Agents was the principal speaker. A. W. Zackey of Philadelphia, vice president for the Eighth District, also made a talk.

# # # # # MEMBERS NIGHT AT TORONTO

February 13th was highlighted as "Members Night", when the Purchasing Agents Association of Toronto, Can., held its monthly meeting at the Royal York Hotel. Local membership was honored when four members from their ranks were selected to address the session on subjects of their own choice. The quartette selected included Jack Crossingham, Acme Carbon Co.; Guy Hunt, Bauer & Black; Jack Warner, A. C. Wickman Co.; and Stanley Saunders, General Steelwares.

At the association's January 9th meeting, "Executives' Night," Kenneth R. Wilson, Ottawa correspondent for the Financial Post, spoke on "Full Employment Prospects." Mr. Wilson is a keen analyst of business trends, and provided much food for thought on business cycles.

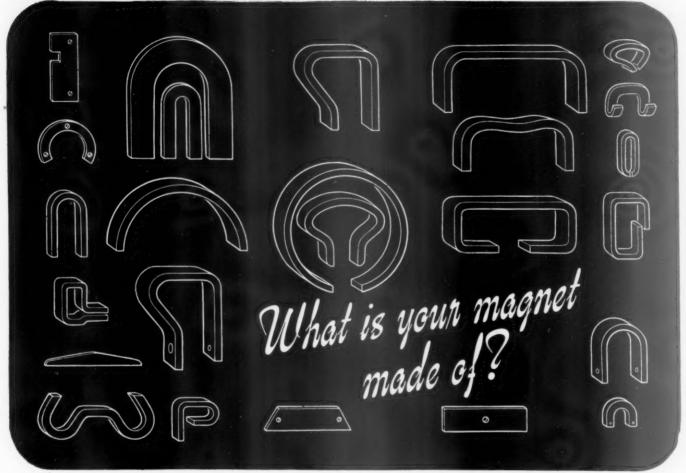
## OUT-OF-TOWNERS WELCOMED AT SPRINGFIELD, OHIO

The Purchasing Agents Association of Springfield, Ohio, at its February 18th meeting at the Shawnee Hotel, welcomed the following out-of-town guests: President C. R. Kelly and Vice President T. E. Dimke from the Dayton Association; President E. L. Clayton, National Director Al Bader, and Vice President Edward Frederick from the Cincinnati Association; and Milton Blersch of the American Tool Works. Speaker of the evening was Al Payne, Republican candidate for Governor, who spoke on good government. The meeting was presided over by President Weadon.

At its second February meeting, B. F. Downey reports that the number of members who will attend the National Convention in Chicago is increasing, and that a splendid representation from the

(Continued on page 226)

#### PERMANENT MAGNETS MAY DO IT BETTER



(This is the first of three advertisements regarding permanent magnet materials)

### PERMANENT MAGNET STEELS

Natural successors to primitive soft iron magnets were those of carbon steel to which, later, were added chromium, tungsten or cobalt. They may be formed from rolled stock, or cast in desired shapes, and can be drilled and machined after an annealing operation. They are heated to precise temperatures and then quenched in oil or water to develop permanent magnet properties.

Materials in this group have high residual inductions and coercive forces ranging from 60 oersteds in the chromium steels to 250 oersteds in the high cobalt grades. Because these materials are machinable, they may be used to advantage in some applications requiring machining and having magnetic requirements within their limitations. Proper allowance

must be made for the demagnetizing effect of stray magnetic fields and vibration, and care must be taken that their temperature limits are not exceeded.

The Indiana Steel Products Company uses numerous magnet steels and Alnico alloys in both cast and formed magnets, and has the specialized experience to select the material best suited to each specific job, engineering personnel to create the optimum design, and equipment to furnish the permanent magnets most suitable for any application. The complex factors of magnet design make engineering consultation advisable; many problems call for development or research. Write for complete information. Send for free copy of technical hand book: "Permanent Magnet Manual."

#### \* \* \* THE INDIANA STEEL

6 NORTH MICHIGAN AVENUE, CHICAGO 2, ILLINOIS



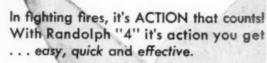
#### PRODUCTS COMPANY \* \* \*

Copr. 1945, The Indiana Steel Products Co.
SPECIALISTS IN PERMANENT MAGNETS SINCE 1910



# RANDOLPH TRIGGER-TOUCH

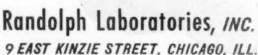
EXTINGUISHERS!



Just one hand snaps this extinguisher from its bracket . . . one trigger-touch sends clouds of penetrating carbon dioxide into the blaze—smothers the fire in split-seconds! With no valves or nozzles to adjust, Randolph extinguishers eliminate panic—get the employee to the blaze before it spreads!

A dry, non-toxic gas, carbon dioxide does not damage equipment or conduct electricity. It leaves no stain or liquid to clean up. And here's a fire-fighting agent that can't freeze or deteriorate . . . ends constant refilling and repairs.

Check up on your flammable liquid and electrical hazards . . . mobilize against fire with Randolph "4", "10", "15" and "25" fast-action extinguishers. To get the complete fire protection facts, simply tear out the coupon below, or write us—today!





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Also extin		ils o	n ne	w car	bon	dio	xide	fire

NAME .....

COMPANY

ADDRESS

(Continued from page 224)

Springfield Association will be present.
Meeting on March 13th was highlighted by discussion on radar, and the March 27th meeting was "Salesman's Night," with Vice President Avery as special guest. Several members attended meeting with Cincinnati Association on March 12, at Cincinnati.

#### NELSON J. GIBBONS HEADS CENTRAL MICHIGAN ASSN.

Nelson J. Gibbons was elected president of the Purchasing Agents Association of Michigan at annual meeting held in Owosso. Other officers elected are: Frank W. Huxtable, first vice president; Harry E. Zuck, second vice president; Harold Minnis, treasurer; G. Boyd Vass, secretary; Stanley Bien, national director; and, Barney C. Cox, Roscoe Hain and Horace L. Brewer, directors.

#### RETURNED SERVICE MEN SPEAK AT LOS ANGELES MEETING

The monthly dinner meeting of the Purchasing Agents Association of Los Angeles at the Elks Club on March 14th, was given over to talks by returned service men, many of whom were engaged in procurement and material capacities while in service. Among the speakers were Brig. Gen. Wayne R. Allen; Technical Supply Sgt. Beecher Atkinson; Lt. Col. Al Hesse; Lt. Edward Metcalf, U. S. N. R.; Lt. (j.g.) D. E. Considine; Lt. Comdr. J. M. McCool, and Major Fred Calin.

#### "WAR TIME MILITARY PROCURE-MENT" BIRMINGHAM

Captain Hudson R. Sours, contract officer between the Army Air Forces and the Bechtel-McCone Corporation at the Birmingham Modification Center, was guest speaker at luncheon meeting of the Purchasing Agents Association of Alabama, at the Thomas Jefferson Hotel, Birmingham, on March 14th. His subject was "Wartime Military Procurement." In private life, Capt. Sours is an attorney in Peoria, Ill.

## CINCINNATI HEARS STORY OF THAILAND UNDERGROUND

At the fourth annual joint meeting of the Cincinnati Sales Executive Council and the Cincinnati Association of Purchasing Agents, held at the Hotel Gibson, Cincinnati, on February 12, the inside story of the underground movement in the oriental kingdom of Thailand was revealed by Col. Nicol Smith, former member of the Army's Office of Strategic Services. Mr. Smith was introduced by C. A. P. A. President Lee Clayton. The program was in charge of Louis Pochat, chairman, who was assisted by Paul Eberhart and Jack Reese of the C. A. P. A., and Charles Staab, Stephen Douglas,

(Continued on page 228)

BENDIX HOME

enlists Jadvantages
of Phillips Screws
to make
BIG ASSEMBLY
SAVINGS

"DRIVER SKIDS HERE WOULD COST US
UP 10 \$5.00 EACH"

This investigator from James O. Peck Co., industrial research authorities, is visiting representative plants to get unbiased facts on assembly savings. Get his fact-filled reports!

Harry L. Spencer, Bendix V. P. in charge of manufacturing, told the investigator. "Since we'll use well over 19,000,000 Phillips Screws this year on washer production alone, that means an important saving.

"THEY'RE MUCH, MUCH FASTER by every driving test,"

"EVERY DRIVER SKID WE AVOID (and we'd have plenty with slotted screws) saves us 50c to \$5.00, according to the extent of the damage, for disassembly, refinishing, and reassembly. That's another reason why we are sold on Phillips."

"UNSIGHTLY SLOTS with burrs to snag clothes just couldn't be tolerated on a washer. We get no burrs with the Phillips Head—and it looks well, wherever it shows."

These highlights from the complete report on Bendix assembly savings point up economies you can't afford to ignore with today's squeeze on profits. This report, together with others now ready, and more to come, make up a practical manual of successful assembly practice, inside facts you can get now, FREE.

Report No. 4

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WITH PHILLIPS SCREWS
Company
BENDIX HOME APPLIANCES, INC.
South Bend, Ind.
Products
Home Appliances

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WHATEVER YOU MAKE, THERE ARE SAVINGS SUGGESTIONS FOR YOU IN THESE REPORTS!

Studies cover products of metal, plastic, wood. Get these reports! Mail the coupon TODAY.

# PHILLIPS Recessed SCREWS

Wood Screws . Machine Screws . Self-tapping Screws . Stove Bolts

American Screw Co.
Atlantic Screw Works
Atlan Bolt & Screw Co.
Central Screw Co.
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Continental Screw Co.
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The Southington Hardware Mfg. Co
The Steel Company of Canada, Ltd.
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PHILLIP	S	SCREW	MFRS.,
c/o	H	orton-No	oyes

2300 Industrial Trust Bldg., Providence, R. I.

Please send me the reports on Assembly Savings with Phillips Screws

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Moving days are no headaches when your storage and utility buildings, tool sheds and similar structures are standard Armco Steelox Buildings,

They can be taken down and readily moved from one location to another. Erection is quick. Even an inexperienced crew of four men can assemble a 12' x 24' structure in approximately 10 hours.

#### MANY ADVANTAGES

ARMCO STEELOX Buildings are completely demountable, yet retain all the advantages of a permanent structure. These include fire-resistant all-steel construction and tight joints that exclude dust, insects, or vermin.

STEELOX can be quickly wired, easily insulated. The special Galvanized PAINTGRIP surface takes and holds paint. Write for sizes and prices. Armco Drainage & Metal Products, Inc. and Associated Companies, 1725 Curtis Street, Middletown, Ohio.

#### **ARMCO STEELOX Buildings**



(Continued from page 226)

Joseph Sherry and Leonard Anderson of the Sales Executive Council.

At its March 12th meeting, the Cincinnati Association had as its guest speaker Edwin B. Newton, Associate Director of Research of the B. F. Goodrich Co. His subject was "Society's Stake in Scientific Research."

# STREAMLINED PURCHASING INDIANAPOLIS

"Streamlined Purchasing—A Key to Peacetime Profits" was the subject of talk delivered by A. N. Phillips, Switzer-Cummins Co., before members of the Purchasing Agents Association of Indianapolis, Ind., at their dinner-meeting on February 19th in the Columbia Club. Mr. Phillips is president of the association.

#### INVASION SUPPLY PROBLEMS WESTERN PENNSYLVANIA

The subject of supply problems affecting the European invasion was discussed on February 14th by Joseph E. Bonneau, former army colonel, at a meeting of the Purchasing Agents Association of Western Massachusetts, held in Hotel Kimball, Springfield, Mass. William M. Murray was in charge of the program.

## REVIEW OF RUBBER SITUATION

E. A. Hamilton, Southern District Manager of Raybestos-Manhattan, Inc., was guest speaker at the February 28th luncheon meeting of the Purchasing Agents Association of Alabama, Inc., at the Thomas Jefferson Hotel, Birmingham. His topic was "Review of the Rubber Situation."

#### ANNUAL FOOTBALL PARTY AT COLUMBUS

The Purchasing Agents Association of Columbus, Ohio, held its traditional annual Football party at the Seneca Hotel on January 29th, at which more than 250 members and friends greeted Paul Bixley, new head coach of Ohio State Uni-



President W. L. Betz of the Columbus Association presents Certificate of Appreciation to J. T. Dunnick, who resigned from the association and the office of treasurer.

versity, who told of his aims and ambitions for the 1946 season. It was Coach

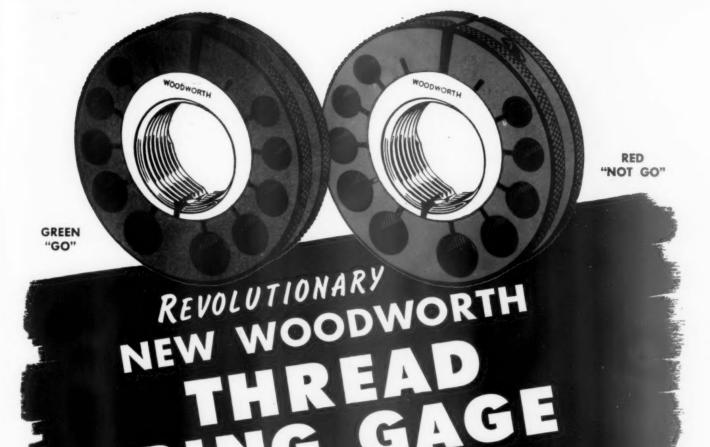
Bixley's initial appearance in the "Gravy League" as the banquet season is known.

Byron B. Redman, district manager of the Kroger Grocery & Baking Company served as toastmaster for the affair. His stooge and the recipient of the brunt of his jokes was the association secretary, Mark Swisher, who, along with A. J. Ulrich had left the meeting to receive selective service medals as members of a local draft board. Mr. Swisher was commended by Mr. Redman as the man to "end all members' 'butter worries.'"

Highlight of the meeting was the presentation by President W. L. Betz, of a "Certificate of Appreciation to J. T. Dunnick for faithfully serving as treasurer of the association for the past several years. Mr. Dunnick has resigned as treasurer of the association, having terminated his service as manager of General Electric Supply Corporation, Columbus, with whom along with its predecessor company, the Erner-Hopkins Company, he has been associated for more than 35 years. Malcolm C. Forgrave of the Barneby Cheney Engineering Co., succeeds him as treasurer.



Paul Bixley, new head coach of Ohio State University, makes initial appearance in "Gravy League" at Annual Football Party of the Purchasing Agents Association of Columbus.



# "It Starts round and Stays round with every adjustment!"

The new Woodworth Adjustable Thread Ring Gage offers many sensational improvements over those of conventional design.

Proven by actual tests to be mathematically round through the full range of adjustments, its revolutionary design permits a degree of accuracy in thread inspections never before obtained.

Step up your production — reduce your manufacturing costs—with this new Woodworth instrument of accuracy.

# 5-PLUS FEATURES

- GREATER ACCURACY AND STABILITY
- LONGER WEAR LIFE
- LESS WEIGHT
- POSITIVE IDENTIFICATION
- POSITIVE ADJUSTMENT

ACCURACY YOU CAN TRUST

Wire or write for Folder No. 46R

# WOODWORTH

N. A. WOODWORTH CO., SALES DIVISION, 1300 E. NINE MILE ROAD . DETROIT 20, MICHIGAN PRECISION GAGES . PRECISION MACHINE AND AIRCRAFT PARTS . DIAPHRAGM CHUCKS . ADJUSTABLE CLAMPING JIGS . SPECIAL TOOLS

APRIL.



G-E Watch Dogs are not only designed to start fluorescent lamps properly, but they are also equipped to stop them properly. When lamps die, the Watch Dog promptly cuts out of the circuit. This action prevents dead lamp flickering and protects the ballast against overheating. It also conserves the life of the starter, since the starter does not wear itself out attempting to re-light a deactivated lamp. This is the reason why one Watch Dog will outlast five ordinary starters, and why you get five times more service with this starter.

Maintenance becomes a vast!y simplified job when Watch Dogs are installed. Because of their long life, starter replacements naturally are fewer. Preparing a fixture for renewed operation is reduced to the simple task of pressing the starter's reset button before relamping.

For additional details on Watch Dogs and other accessories in the complete G-E

ror additional details on Watch Dogs and other accessories in the complete G-E line, write for our free catalog. Address request to Section G461-77, Appliance and Merchandise Department, General Electric Company, Bridgeport, Conn.

# GENERAL & ELECTRIC

#### ANNUAL LADIES NIGHT CLEVELAND

On Thursday evening, March 21st, The Purchasing Agents Association of Cleveland held its annual Ladies Night at the Hotel Cleveland, with Congressman Frances Bolton as Speaker of the evening. Congressman Bolton's talk was followed by entertainment and dancing.

#### SHIPYARD PURCHASING PROBLEMS

1 1

R. S. Page, Purchasing Agent, Federal Shipbuilding & Drydock Co., Newark, N. J. was guest speaker at the March 12th meeting of the Metropolitan Purchasers' Assistants Club held in Midston House, New York City. His subject was "A Shipyard Purchasing Agent's Problems." Preceding the dinner meeting Alfred A. Northacker led a discussion on "Hobbies". New member duly welcomed at the meeting was Harold E. Baglin, Mutual Benefit Life Insurance Co.

## SEVENTH DISTRICT NATIONAL DIRECTORS AT NEW ORLEANS

National Directors of the Seventh District in conference at New Orleans on March 15th and 16th were guests at the monthly dinner meeting of the Purchasing Agents Association of New Orleans on the 15th at the Jung Hotel. The meeting was featured by a showing of the 1946 Sugar Bowl football game, narrated by Harry Wisner, Blue Networks Sports commentator.

#### JOHN F. McCORMACK HEADS HOSPITAL BUREAU OF STANDARDS & SUPPLIES

1 1 1

John F. McCormack, superintendent of the Presbyterian Hospital, New York, N. Y., was elected president of the Hospital Bureau of Standards and Supplies, 247 Park Avenue, New York, at recent annual meeting of that organization. Willard W. Butts, superintendent of St. Luke's Hospital, Bethlehem, Pa., was elected vice president; and F. Wilson Keller, superintendent of the Hospital for Special Surgery, New York City, was named secretary-treasurer. William A. Gately is executive director of the Bureau.

#### 7 7 7 OXYGEN IN INDUSTRY MONTREAL MEETING

A motion technicolor-sound picture entitled "No Keener Blade" which portrays the story of the use of oxygen in industry, particularly the cutting and shaping of steel for subsequent fabrication, was shown at the March 19th meeting of the Purchasing Agents Association of Montreal at the Mount Royal Hotel. At "Research Meeting" under the direction of Wm. E. Leeson preceding the dinner meeting, the subject "So You Want to Build a House" was

(Continued on page 232)

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# FOR A WHOLE LOT MORE HOLES Per Tah

Threadwell cold-tempering of every high speed tap, at 120° below zero, means better threads as well as more of them per tap at no extra cost to you!

Don't take our word for it. Make your own comparative performance tests on steel, cast iron, alloys, plastics any material however tough on ordinary taps

You'll find the Threadwell distributor in your locality unusually helpful and cooperative. He knows that once you try Threadwell COLD TEMPER Taps you'll never go back to ordinary taps. Try them, once, and see why.

DISTRIBUTORS IN LEADING INDUSTRIAL CENTERS THROUGHOUT THE UNITED STATES AND THE WORLD



THREADWELL SCREW PLATES assure straight, accurate threading. Each die is furnished with a pressed steel guide that makes it easy to cut standard, oversize or undersize threads.

THREADWELL KEYWAY CUT-TER SETS give you the fastest, simplest method of cutting keyways to standard width and any desired depth in gears, cutters, couplings, pulley hubs, etc. May be used with any press. Threadwell offers an ideal Arbor Press for the purpose.





THREADWELL TAP AND DIE COMPANY . GREENFIELD, MASSACHUSETTS, U. S. A.

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APR

Do you know ???

That the majority of holes drilled in all industrial materials are less than 34" in diameter?

That, the Walker-Turner Radial Drill, dollar for dollar, is the soundest investment in the drill-

No other drill press of like capacity can equal its versatility of operation. It drills to the center of a 62" circle! The head tilts to 45° either side. The ball bearings in column, jack-shaft and spindle assembly give it smoothness and long life! It has 16 speeds—from 160 to 8200 R.P.M. The cost is low. Get all details of this versatile producer.

ing of small holes?

WALKER-TURNER COMPANY, INC.
Plainfield New Jersey

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DRILL PRESSES - HAND AND POWER FEED \* RADIAL DRILLS
METAL-CUTING BAND SAWS \* POLISHING LATHES \* FLEXIBLE SHAFT MACHINES
RADIAL CUT-OFF MACHINES FOR METAL \* MOTORS \* BELT & DISC SURFACERS





#### to tell you about it!

IT has been proved that No. 20 Galvanizing Flux offers results which hot galvanizers have been looking for. Briefly this: more ductile, more adherent coatings—at lower operating costs.

A letter from you will bring full details, or an H-VW-M engineer to explain all the features and advantages of No. 20 in person. And here's additional good news: When you have the facts and have decided to try No. 20—as we think you will—you can get prompt shipment right from stock.

No. 20 Galvanizing Flux is modern, it's better, it's available in a hurry. Get the whole story. Write H-VW-M today.

**1433** 

## HANSON-VAN WINKLE-MUNNING CO. MATAWAN, NEW JERSEY

Manufacturers of a complete line of circitroplating and polishing equipment and supplies

Plants: Matawan, New Jersey · Anderson, Indiana

Sales Offices: Anderson · Chicago · Cleveland · Dayton · Detroit · Elkhart

Matawan · Milwaukee · New Haven · New York · Philadelphia

Pittsburgh · Rochester · Springfield (Mass.) · Syracuse



(Continued from page 230)

handled by National Vice President, district No. 5, W. J. Mackay.

An interesting feature of the dinner meeting was the presentation of prizes and diplomas to members of the Sir George Williams College Purchasing Class, conducted by John Crawford, who were guests of the association.

#### FCONOMIC OUTLOOK CLEVELAND MEETING

"Economic Outlook — Short Term Forecast and Long Term Pattern" was subject of Jacob Baker, consultant on management and planning of the Econometric Institute of New York City, at the annual Executive Night dinner of the Purchasing Agents Association of Cleveland, Ohio, on February 21 at the Hotel Cleveland. The program also included the Orpheus Male Chorus. Tom Hudson, assistant district purchasing agent, American Steel & Wire Co., was chairman.

Mr. Baker predicted that in 1946 prices would increase 12 per cent and wages would go up 15 per cent. He added that he thought the same increase in both categories would take place in 1947.

"We need to build 15 per cent more capital plants before things will level off," he said, "and I think there will be high employment and high business activity for at least 15 years.

# TRADE COMMISSIONER SPEAKS AT VANCOUVER MEETING

By R. A. BAKER

A graphic description of the industrial and economic hardships the United Kingdom is undergoing was given by Harry Oldham, British Trade Commissioner to British Columbia and Alberta, at the February meeting of the Purchasing Agents Association of British Columbia, Vancouver, B. C. He asked his audience to "buy British" whenever possible.

Mr. Oldham emphasized that he was not seeking trade on a sentimental basis. "The British manufacturer wants to give full value, but like the rest of us, he would like a share of the breaks," said the commissioner. He reminded his audience that the war's end had found Britain with 46,000,000 "extremely tired people and an empty exchequer." With 2,000,000 men still under arms, a shortage of raw materials and enormous debt, the country cannot be expected to stage an overnight comeback, he said. On the more encouraging side of the picture, however, he told how the British Government was conducting an all-out program of reform in various fields of industry, seeking greater efficiency, higher production, and fair return for both labor anl capital.

The recently created Education Committee under the Chairmanship of Brad. Watson is busily engaged in formulating plans for an intensive course of study of prescribed purchasing problems. A number of members have signified their intention of attending the meetings.

Following the success achieved by the (Continued on page 234)

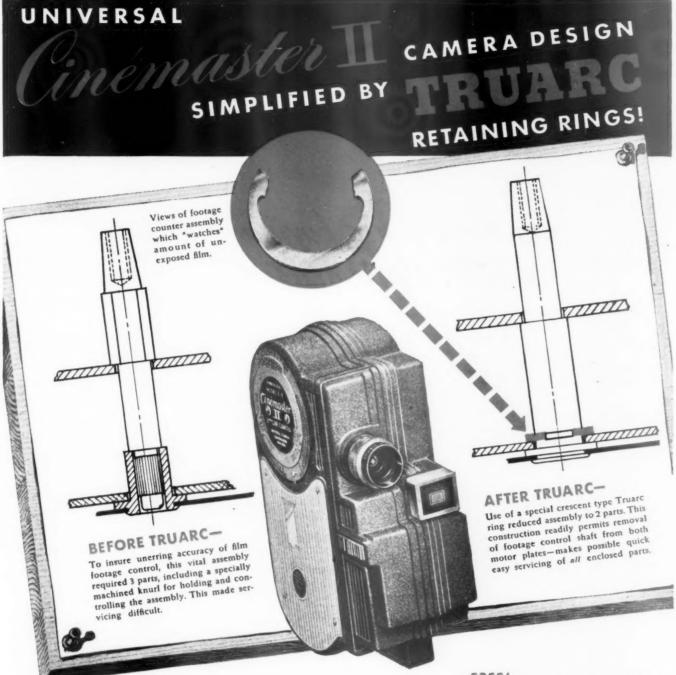
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#### Now your machines can have the

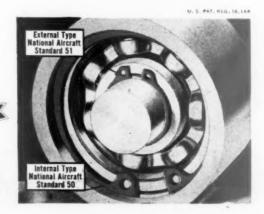
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APRIL

(Continued from page 232)

Food Industries Committee, ably headed by Alec Dunbar (Vancouver Supply Co. Ltd.), the suggestion has been advanced that a logging, mining and pulp and paper group be similarly organized. With this object in view, a get-together meeting has been called by Tom Fletcher (Pioneer Timber Co. Ltd.). If sufficient interest is displayed, definite plans will be made accordingly.

## NORTHERN CALIF. ASSN. HAS HEAVY FEBRUARY CALENDAR

Association officers may find of more than passing interest the following calendar of activities of the Purchasing Agents Association of Northern California for the month of February:

February 5th, luncheon meeting, Oakland: Motion picture in two parts entitled "Abraham Lincoln—the Frontiersman", and "Abraham Lincoln — the Statesman."

February 5th, San Francisco: Second lecture in 1946 educational course in Principles and Practice of Purchasing.

February 6th: Annual Dinner and Theater Party.

February 7th: Luncheon meeting, San Francisco. "Quality Control", by Frank M. Harris of Pacific Gas & Electric Company.

February 14th: Monthly meeting held jointly with third class in 1946 Educational course in Principles and Practice of Purchasing. "Principles of Capitalism, Socialism, and Communism as They Affect Business", by Professor Royal A. Roberts, The University of California.

February 19th: Oakland, luncheon meeting.

February 19th: Fourth Lecture in 1946 Educational course. Subject, "The Value of Research, Reports, and Business English to the Purchasing Agent."

February 21: Luncheon Meeting, San Francisco: Subject, "George Washington—Father of our country", by James Mussatti, general manager, California State Chamber of Commerce.

February 21, 22, 23: Annual convention of the California State, County and Municipal Purchasing Agents Association, Santa Barbara, Calif.

February 26th: Oakland, presentation by New Products Committee.

February 26th: San Francisco: Fifth Lecture in 1946 educational course. Subject, "The Forces which Affect Price Policy," by Professor Royal A. Roberts.

February 28th: San Francisco, luncheon meeting. Subject, "Television—Its Present Development and Future Plans", by Charles B. Brown, president, Colonial Films Production.

# TALK ON "PURCHASING LAW" MILWAUKEE MEETING

George D. Spohn, member of Lecher, Michael, Spohn & Best, attorneys, Milwaukee, Wis., spoke on "Purchasing Law", at the March 12th meeting of the Purchasing Agents Association of Milwaukee, at the Elks Club.



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APRII



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#### MEASURING PURCHASING DEPARTMENT EFFICIENCY LOUISVILLE

A panel discussion led by G. W. Leep, Educational Chairman, featured the February 19 dinner meeting of the Purchasing Agents Association of Louisville at the Kentucky Hotel. The subject of the discussion was "How to Measure the Efficiency of the Purchasing Department". A spirited discussion was developed with a great many of the members taking part in it.

Fred G. Tiedemann, a long time member of the Louisville Association, who has retired from his position as Purchasing Agent for the Kosmos Portland Cement Co. of Kosmosdale, Kentucky, was elected to honorary membership in the Association.

The following new members were presented at the meeting: Walter Nussbaum, Karl Nussbaum Co.; Matt H. Franck, J. F. Kurfees Paint Co.; E. S. Barry, Tobacco By-Products & Chemical Corporation; Dan P. Clark, Lexington Signal Depot; Herman Weist, Peerless Mfg. Co.; Wm. Boamer, American Air Filter; J. J. Shellhamer, Lou. Mill Supply Co.; and Carl A. Robison, Kosmos Portland Cement Co.

## PRESIDENT SHELDON GUEST OF RHODE ISLAND ASSN.

President Charles L. Sheldon of the National Association of Purchasing Agents, was guest speaker at meeting of the Rhode Island Purchasing Agents Association held in the Narragansett Hotel, Providence, February 25th. Admitting that wartime controls were necessary, he warned of the continuance of such controls, stating that "When government takes over as the controller and regulator of business, private enterprise begins to grow anemic. Federal controls of business and industry mean a corresponding loss of free initiative. The poor quality of merchandise in a totalitarian state has been demonstrated many times during the war."

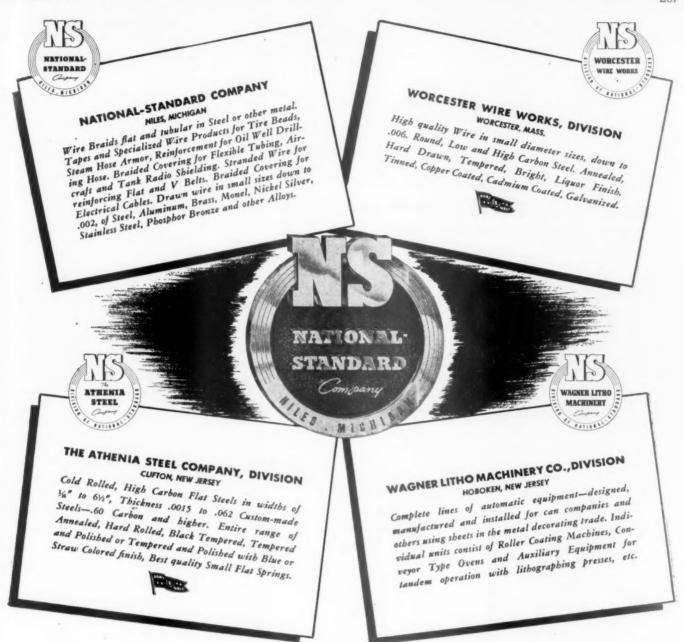
#### PLAN STUDY COURSE AT MEMPHIS

Plans were discussed for a year long course on the "Economics of Purchasing" at the February dinner-meeting of the Memphis Association of Purchasing agents held at Hotel Gayoso, Memphis.

James Pidgeon, Pidgeon-Thomas Iron Co., president, announced that the course would be in a series of lectures and the services of an instructor from one of the colleges would probably be obtained. Considerable interest is manifest in the educational course.

Purchasing agents of the Tri-States, including Mississippi, Arkansas and Tennessee, attended the March 20 meeting.

New members welcomed were: B. F. Connor, Delta Oxygen Co.; E. J. Smith, Stratton-Warren Hardware Co.; T. G. Mulherin, Stratton-Warren Co.; and Mrs. Sue Berry, Phoenix Rubber Co.



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Is it merely that they are grouped together under National-Standard's leadership?

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Each division likes to tackle tough assignments . . . has long experience in analyzing problems peculiar to many different industries. And, even after a better steel, wire, or

any one of the other products listed is developed, work does not stop... ways and means of improving a product, its method of use or application are still studied.

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APRIL



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### DISCUSS FIBERGLAS AT TULSA MEETING

The Owens-Corning Fiberglas Corporation presented a program on Fiberglas, under the direction of Michael Curran, Southwest Division manager, Dallas, Tex., in cooperation with J. F. Stephens, vice president, Gustin-Bacon Manufacturing Co., Kansas City, Mo., at the March 12 meeting of Purchasing Agents Association of Tulsa. Interesting features were the showing of the sound picture "Fiberglas Reports to Industry", and display of Fiberglas products used in various industries.

The association's March 26th meeting was on Magnesium, the subject being presented under the direction of the Dow Chemical Company. In addition to a motion picture showing the manufacture of magnesium, there was a talk by Luther S. Rhoem of the Dow Chemical Company, and also a display of magnesium castings.

# FOREIGN TRADE CONNECTICUT ASSOCIATION

At the February 26th meeting of the Purchasing Agents Association of Connecticut, Inc., held at the Oakdale Tavern in Wallingford, Prof. Eugene V. Rostov of Yale University addressed members on the subject of "Foreign Trade." The meeting followed the second session of course in purchasing where "How to Measure Efficiency of Purchasing Department" was discussed. Guest experts at the meeting included Harold B. Reid, vice president and sales manager of Wallace Barnes Co. Div., and H. E. Pape, director of purchases for Stanley Works.

# LAMINATED PLASTICS FILM SHOWN AT COLUMBUS MEETING

Following an address by W. F. Avery, vice president of the Sixth District, N. A. P. A., the Columbus, Ohio, Chapter, at its February meeting, saw the "Formica Story," a 45-minute sound film in color, which gives the story of laminated plastics, their synthesis, production and use. The film was presented by G. A. Morrell of the Formica Insulation Co., Cincinnati.

#### SHELDON DISCUSSES NEW ERA OKLAHOMA CITY

A new era of manufacturing processes and new improved products to be sold to consumers for less money were described to the Purchasing Agents Association of Oklahoma City, Okla., by N.A.P.A. President Charles L. Sheldon at the association's January 24th meeting in Huckins Hotel. About 50 members were in attendance. Disclaiming the theory that war stimulates scientific discoveries and manufacturing processes, Mr. Sheldon declared that war only "accelerates the development of pre-war research." He stressed the increased responsibility P. A.'s have in supplying their companies with raw materials in peace time.

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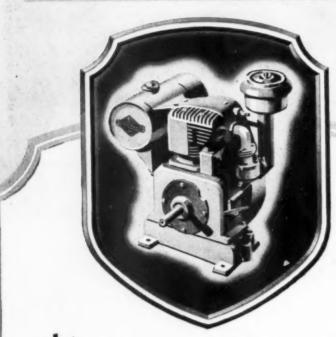


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### DISCUSS RESEARCH AT TWIN-CITY MEETING

F. W. Manley, sales manager, Minnesota Mining and Manufacturing Company, St. Paul, Minn., was guest speaker at the March 13th meeting of the Twin City Association of Purchasing Agents, held at the Athletic Club, Minneapolis Mr. Manley's subject covered the research activities of the Minnesota Mining a Manufacturing Company.

## ELECTRONICS IN LIGHTING . CHICAGO MEETING

Don P. Caverly, director, Lighting Center, Sylvania Electric Products Company, was guest speaker at the March 14th meeting of the Purchasing Agents Association of Chicago held at the Sherman Hotel. Mr. Caverly made a nontechnical talk on "Electronics in the Lighting Industry", giving interesting demonstrations of various phases of his subject.

# 1 1 1 CARBON BLACK TREASURE MUSKEGON

The motion picture film, "Carbon Black Treasure," was shown to members of the Purchasing Agents Association of Muskegon, Mich., at its February 19th meeting in the Occidental Hotel, Muskegon. Meeting also featured a discussion period, conducted by Maurice Ramsey, director of purchases for Continental Motors, on the qualifications of a purchasing agent. Program was arranged by Sam Vanderlaan, West Michigan Steel Foundry Co.

#### SILICONES DISCUSSED AT SYRACUSE MEETING

Members of the Purchasing Agents Association of Syracuse and Central New York were presented with an unusually interesting talk on "Silicones" at their February 27th meeting held at the Onondaga Hotel, Syracuse, by Kingsley W. Given, Chemical Department, General Electric Company. Mr. Given explained the uses of different types of Silicone compounds, as lubricants, as insulating materials, molding materials, and silicone rubber.



Jerry L. Watson, Purchasing Agent, Florida Power Commission, St. Petersburg, Fla., who was recently elected president of the Purchasing Agents Association of Florida.

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THE war years showed in a very striking way how important the Industrial Distributor is to American Industry. There were innumerable instances where Supply Houses came to the rescue to keep important production machines operating.

The Flexible Steel Lacing Co. has always believed in, and supported, Supply House Distribution and because of this long and friendly association, the service rendered to Industry on belt fasteners has gone a long way toward helping to keep the wheels turning.

Here are the fasteners your Supply House can furnish for conveyor belts, flat transmission belts and V-belts—

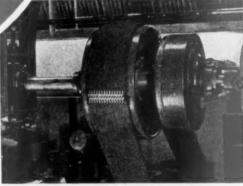
- Flexco HD Belt Fasteners for making "water-tight" butt joints in conveyor belts from 1/4" to 11/2" thick and of any width. These fasteners together with Flexco HD Rip Plates are also used to repair rips and to put in patches. Complete details in Bulletin F-100.
- Alligator Steel Belt Lacing has for more than 30 years been the most universally used steel belt lacing in the world. Makes smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to %" thick and as wide as they come. Ask for Bulletin A-60.
- Alligator V-Belt Fasteners are used to fasten B, C, and D open-end V-belting of cross-woven fabric-core construction now being made by most belting manufacturers. Details in Bulletin V-205.
- Flex V Fasteners are also available for light duty A and B V-belt drives as described in Bulletin V-14.

Handled by Supply Houses Everywhere

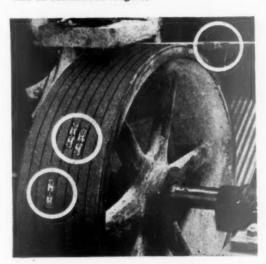
FLEXIBLE STEEL LACING CO., 4697 Lexington St., Chicago 44



Note the natural troughing of this coal conveyor belt fastened with Flexco HD Fasteners. These fasteners stand up under the heaviest service conditions.



No special tools are required to fasten a belt with Alligator Steel Belt Lacing. Just use a hammer and have the belt back in service in a jiffy. Made in 12 sizes in steel, Monel, and Everdur and in continuous lengths.



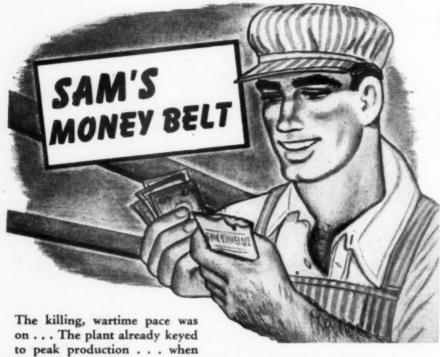
Here is a typical application of Alligator V-belt Fasteners where the use of endless V-belts would require dismantling the machinery to put the belts on the sheaves.

ALLIGATOR

STEEL BELT LACING AND V-BELT FASTENERS

FLEXCO HD

BELT FASTENERS
FOR CONVEYOR BELTS



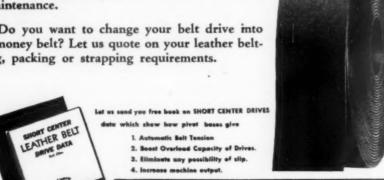
an emergency government order came in! The Single Spindle Presses weren't built to handle 38" drills-the belt drive was lighter than the load demanded. But, the job was vital-and Sam got it out! The 11/2" Duxbak Single Ply Belt on his drill press turned out to be a money belt for Sam. He produced more piecework per hour-collected more take-home pay. Other drill press operators saw it . . . insisted on Duxbak belts for their machines . . . got them-and everyone profited-Government, Management and Operator.

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Belts take the toughest conditions in stride. Their suction-like pulley grip delivers extra RPM -guarantees maximum power output. No more expensive than standard quality belts, Schieren Leather Belts pay for themselves over and again by minimizing costly shutdowns and reducing maintenance.

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#### "POSTWAR BOOM" EASTERN NEW YORK

At the Purchasing Agents Association of Eastern New York Annual Executive Night, held on March 21 at DeWitt Hotel in Albany, members and guests attending heard an address on "The Postwar Boom in Capital Goods Industries," delivered by A. W. Zelomek, President of International Statistical Bureau, Inc., and Economist for Fairchild Publications

#### 1 1 1 N. A. P. A. PRESIDENT AT RHODE ISLAND

Guest speaker at the February 25th dinner meeting of the Rhode Island Purchasing Agents Association, held at Narragansett Hotel, Providence, R. I., was Charles L. Sheldon, president of the national association. New members approved by the Board of Directors include Bernard V. Buonanno of the Atlantic Chemical Co., and Wilder V. Woods, Textron Mills, Inc.

#### 1 1 1 LIQUID OXYGEN DEMONSTRATION SAGINAW VALLEY

Members of the Purchasing Agents Association of Saginaw Valley, Mich., following their February 12th business meeting at the Wenonah Hotel, Bay City, Mich., witnessed a demonstration of the use of liquid oxygen in a series of experiments. The demonstration was under the direction of Harold M. Macauley, vice president of Wolverine Gas Products Co.

#### FORT WAYNE RUNS ANNUAL DINNER DANCE

The Purchasing Agents Association of Fort Wayne, Ind., held its annual dinner dance at the Chamber of Commerce on February 23rd. Steve Clark's WOWO orchestra played in the auditorium for dancing after dinner.

#### HEINRITZ SPEAKS AT HOSPITAL BUREAU ANNUAL MEETING

Stuart F. Heinritz, editor of PUR-CHASING, was guest speaker at the annual meeting of the Hospital Bureau of Standards & Supplies on February 28th at the Hotel McAlpin, New York City. His subject—"What's New in Purchasing."

#### STEEL SITUATION N. W. PENNSYLVANIA MEETING

At the February 7th meeting of the Purchasing Agents' Association of Northwestern Pennsylvania, held at the Carver Hotel in Warren, Pa., guest speaker of the evening was B. D. Henderson, director of purchases for Westinghouse. His address was followed by a discussion on the steel situation by H. W. Ledebur of Warren, Pa.



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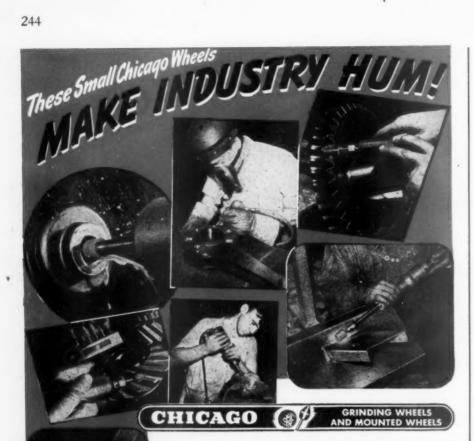
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Whether it's removing burrs, smoothing edges, squaring surfaces so accurately that the finish can be measured in micro inches, or cut-off work — there's a Chicago ready to do a top-ranking job for you.

VITRIFIED GRINDING WHEELS with a 50-year pedigree. Up to 3" in diameter in various abrasives and bonds including the famous FV Bond.

MOUNTED WHEELS. The largest assortment made with a shape and abrasive to take care of every internal and external finishing job.

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#### ANNUAL DINNER DANCE PORTLAND, OREGON

The Purchasing Agents Association of Oregon held its annual dinner dance for members, wives and guests, at the Columbia-Edgewater country club, Portland, on February 23rd. A number of members of the association are making arrangements to attend the Northwest Conference which is scheduled to be held at Seattle on April 26-27.

#### "FROM ONE P. A. TO ANOTHER" ELMIRA MEETING

George A. Renard, Executive Secretary of the National Association, was guest speaker at the February 28th meeting of the Purchasing Agents Association of Elmira, at the Mark Twain Hotel, Elmira, N. Y., addressing the group on the theme "From One P. A. to Another"

#### "BUYER LOOKS AT BUSINESS" CENTRAL MICHIGAN EXECUTIVE NIGHT MEETING

1 1 1

Editor Stuart F. Heinritz of PUR-CHASING Magazine was guest speaker at the Executive Night meeting of the Purchasing Agents Association of Central Michigan, at Lansing, Michigan, on March 19th. Mr. Heinritz spoke on the subject, "The Buyer Looks at Business."

#### FUTURE RAILROAD SERVICE BOSTON MEETING

Robert M. Edgar, assistant to the president of the Boston & Maine Railroad and the Maine Central Railroad, was the principal speaker at the March 12th meeting of the New England Purchasing Agents Association, held at Schrafft's, Boston. Three new applications for membership and three transfers were reported. by Secretary H. J. Graham.

#### GEORGE A. FERNLEY PRESENTED WITH AWARD OF MERIT

George A. Fernley, secretary of the National Wholesale Hardware Association, Indianapolis, Ind., was presented with the Award of Merit and Gold Medal, awarded annually to an outstanding individual associated with the industry who has reflected credit upon American business, at the 60th Annual Banquet of the Hardware Merchants and Manufacturers Association of Philadelphia, at the Bellevue-Stratford Hotel on January 31st. The presentation was made by S. Horace Disston, president of Henry Disston & Sons Company, who was chairman of the Jury of Award.

The award recognized that Mr. Fernley "had done much to promote industry consciousness as well as a realization of the dependency of the manufacturer, wholesaler and retailer upon each other. At all times he has been ready, willing and anxious to undertake any task no matter how arduous to the end that the industry might benefit and progress.

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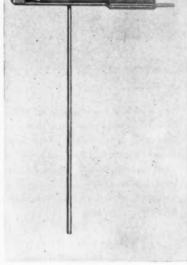


#### SWITCHES by GUARDIAN for every purpose

Scan the brief pictorial review of Guardian Contact Switch assemblies shown above and you will probably see a switch that is comparable to your needs. Each unit represents a switch so practical, so saving of assembly time, energy, materials and money, as to be worthy of your immediate consideration.

The Guardian Featherub Switch is an example of such true efficiency. It is shown to the lower right of this page. An original Guardian creation, it is actuated mechanically and is adaptable to manual, roll-over or cam action. The Guardian Featherub and all other units shown are standard items. There are hundreds of other types, all of the highest quality. Contact blades are obtainable in phosphor bronze tinned to withstand salt spray test, also in standard Guardian phosphor bronze. All switches are properly insulated. The switch you need is here singly or in combination... one or a million! Try Guardian Switches for performance, price and delivery. Write.

You are invited to visit Guardian's Booth, No. 51, Radio Parts and Electronic Equipment Trade Show, May 13-16, Stevens Hotel, Chicago



GUARDIAN FEATHERUB SWITCH

GUARDIAN ELECTRIC

1635-D W. WALNUT STREET

A Complete Line of Relays Serving American Industry

APR

# Good Flooring is costly ... hard to get ... GUARD yours with

**DOLCOWAX** 

The tough, durable film of Dolcowax bears the brunt of traffic and helps preserve expensive flooring underneath. Lustrous and long-wearing, Dolcowax protects, with a minimum of maintenance, linoleum, cork, rubber, mastic, hardwood and other types of flooring.

Spreading with one stroke, two coats of Dolcowax are sufficient for normal usage. Quick-drying, moisture-resisting Dolcowax reduces loss of time when surfacing your floors.

You'll find the solution to your flooring problem in the booklet, "Floor Maintenance."

The C. B. DOLGE CO.

WESTPORT, CONNECTICUT







### WESTINGHOUSE MACHINE TOOL FORUM APRIL 9-10

The Tenth Annual Machine Tool Forum sponsored by Westinghouse Electric Corporation will be held at the William Penn Hotel, Pittsburgh, Pa., April 9th and 10th. Don McGill, manager, Machinery Electrification Section, Industrial Sales Departments, advises that a few of the subjects to be discussed are: duty cycle applications; industry reports on standardization; electrical trends in foreign markets; and vibration in machine tools.

## WAR ASSETS CORPORATION VICE PRES. APPOINTEES

Appointment of five assistant vice presidents of the Capital and Producers Goods Division of the War Assets Corporation following the transfer of the division to WAC from the Reconstruction Finance Corporation, was announced by Lieutenant General E. B. Gregory, WAC Chairman.

The five are Henry W. Cornell, deputy director of the division under RFC, and the following assistant directors: Gustav A. Schwarz, Materials and Supplies; William H. Kelley, Metals; Hamilton A. Morang, Metal Working; and James B. Harvey, Industrial Equipment.

The appointment of Merle A. Crandall as Assistant Secretary of the Corporation also was announced. He also is a transfer from RFC.

# PROPOSED WOVEN WIRE NETTING STANDARD

Recommended Commercial Standard for Woven Wire Netting, TS-4083, revised in line with composite suggestions from leading manufacturers, distributors, consumer organizations, Government agencies, and others, is being circulated to the trade for written acceptance by the Division of Trade Standards, National Bureau of Standards, Washington, D. C.

## BEHR-MANNING ESTABLISHES BRANCH ABRASIVE SERVICE

Booklet entitled "Your New Laboratory, Sir!" recently released by the Behr-Manning Corporation, Division of Norton Co., Troy, N. Y., announces a pioneering service in the coated abrasives industry, namely the provision of branch located methods and equipment demonstration rooms for industrial customer use in pre-testing grinding, sanding and finishing tool-ups on standard commercial equipment, without disturbing their plant production schedules. The booklet includes illustrations showing demonstration rooms in Behr-Manning offices in St. Louis, Chicago, Boston, Cleveland, Detroit, and Troy. Also, announcement is made of the forthcoming openings of similar services in the Philadelphia,

(Continued on page 248)



# N·B·M BABBITT METALS

## We Have the Right Babbitt for Any Need

The success of N-B-M Babbitt Metals is based upon three important factors:

- Virgin metals, to insure stability and uniformity.
- Proper proportioning, to provide adequate physical properties for specific service requirements.
- Expertly controlled preparation; the art of blending requires precise knowledge and constant control.

Write us about your bearing problem

—we have a babbitt to solve it.



**NATIONAL BEARING** 

DIVISION

ST. LOUIS . NEW YORK



PLANTS IN: ST. LOUIS, MO. . PITTSBURGH, PA. . MEADVILLE, PA. . JERSEY CITY, N. J. . PORTSMOUTH, VA. . ST. PAUL, MINN. . CHICAGO, ILL.



Here's a fine piece of work turned out by Aireon Mfg. Co., Burbank, California. Note the mirror-like finish on the rod in the upper picture... it's a beautiful job, one of which the buffers at Aireon can well be proud. We, too, can take pride in the job because the method was suggested by one of our Finishing Specialists with Lea Compound as the finishing composition. It is typical of the service we have rendered industry.

When your production department calls for polishing or buffing compositions, do this before you order: ask if they are using the Lea Method. If not, why not take advantage of Lea service through which your production department may be able to get even better finishing results and even lower costs.



# THE LEA MANUFACTURING CO

Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods and Compositions (Continued from page 246)

High Point, Los Angeles, New York and Cincinnati branches.

Facilities for arranging for use of the laboratories by tool engineers, Purchasing Agents, plant superintendents, and others, are provided in the booklet.

## MINERAL WOOL-TESTING AND REPORTING—CS131

1 1 1

Commercial Standard for Industrial Mineral Wool Products, All Types—Testing and Reporting, No. CS 131-46, effective March 15, 1946, is announced by the Division of Trade Standards of the National Bureau of Standards, Washington, D. C. Mimeograph copy (TS-4074 of the accepted standard is now available.

#### HUGE MACHINE TOOLS SURPLUS AWAITS DISPOSAL

Prompt, equitable disposal of surplus government-owned machine tools—already totaling more than \$300,000,000 in original cost—to provide employment and increase peacetime production was placed at the top of current surplus disposal problems today by the Surplus Property Administration.

W. Stuart Symington, Surplus Property Administrator, and other SPA officials told a meeting of the Metalworking Machinery Industry Advisory Committee in Washington that disposing of this surplus in the best interests of increased industrial output and employment is "one of the greatest economic problems facing this nation today."

It is estimated that, in addition to the \$300,000,000 worth declared by owning agencies as of last November 30, tools costing almost \$1,500,000,000 will be available for surplus disposal by July 1, 1947, the industry representatives were told.

Tools costing \$81,000,000 had been disposed of by November 30, leaving an inventory of some \$223,000,000.

It was pointed out that on November 30, more than 100,000 machine tools of all types were included in the surplus inventory, and within the next year and a half this figure is expected to grow to four or five times as many.

This November 30 inventory was made up of: 27 per cent lathes, 21 per cent boring machines, 18 per cent milling machines, 13 per cent grinding machines and smaller percentages of gear cutters and finishers, drillers, planers and other types.

All surplus machine tools under 25 years of age are sold at a fixed price under a formula that allows for graded deductions from original cost for depreciation.

Under the new "dealer-agency" program, agreements are entered into between the Reconstruction Finance Corporation, the disposal agency, and a qualified person who acts as agent to sell the government's surplus machine

(Continued on page 250)





# More tons of "know-how"-

ASA Standards cover welding flanges only in sizes through 24", but when a flange becomes part of a pressure vessel, big ones like this are often required. And when you see one of these big ones you can be pretty sure it was made by Taylor Forge because we have been the leading suppliers of such flanges for the manufacturers of pressure vessels for more than 25 years.

Of course the problems attending the design and fabrication of boilers and other pressure vessels merge with and overlap those in the piping field. So the knowledge gained in working with boiler manufacturers has made a vital contribution to our knowledge of what constitutes good piping design.

THE knowledge of piping design and related forging technique accumulated through years of solving all kinds of unusual problems has been drawn upon fully in the design and manufacture of our standard line of WeldELLS and other Taylor Forge fittings for pipe welding. It has resulted in fittings of advanced engineering design with features which add to their strength, service life and convenience—others that speed up the job and lower the cost of pipe installation.

Check the features of WeldELLS listed opposite. Here are features that are not combined in any other welding fittings. Surely you want every one of these features in *your* welding fittings. You get them only in WeldELLS and other Taylor Forge fittings, for in the opinion of those best qualified to know, WeldELLS alone "have everything"!

# WeldELLS have everything

TAYLOR FORGE & PIPE WORKS, General Offices & Works: Chicago, P.O. Box 485

New York Office: 50 Church Street

Philadelphia Office: Broad Street Station Bldg.

# WeldELLS alone combine these features:

- Seamless greater strength and uniformity,
- Tangents keep weld away from zone of highest stress—simplify lining up.
- Precision quarter-marked ends
   —simplify layout and help insure accuracy.
- Selective reinforcement—provides uniform strength.
- Permanent and complete identification marking—saves time and climinates errors in shop and field.
- Wall thickness never less than specification minimum — assures full strength and long life.
- Muchine tool beveled ends provides best welding surface and accurate bevel and land.
- The most complete line of Welding Fittings and Forged Steel Flanges in the World—insures complete service and undivided responsibility.





(Continued from page 248)

tools through regular trade channels, making them more immediately available to prospective buyers. Such agencies are granted a 12½ per cent commission to compensate for costs of handling and selling the tools. No other commissions or discounts are made.

A primary objective, the Surplus Property Administration stated, is the modernizing plants where war production has rendered privately-owned machine tools worn or obsolete. Another objective is to open up new markets and to encourage the use of surplus machine tools in small shops without up-to-date equipment. In general, most of the government's tools are of modern design.

111

## BOARD OF EDUCATION MADE SURPLUS BUYING AGENCY

The State Board of Education, Phoenix, Ariz., has been designated by the governor as the state surplus property purchasing agency for schools only. E. D. Ring, state superintendent of public instruction, has been made the executive officer for the agency. A school desiring specific surplus property, it was explained, will file requisition with Mr. Ring who will certify it and forward it to the division of surplus property of the U. S. Office of Education for processing.

1 1 1

#### NEW BOOK ON LUBRICATION

Man's age-long struggle with friction, beginning with the discovery of prehistoric man that it was easier to roll a log than to drag it, and concluding with lubrication recommendations for all types of modern machinery, is the subject of a book just published by the Alemite Division of Stewart-Warner Corporation, Chicago. Entitled "Alemite Answers," it is a graphic presentation, with illustrations of hydrocarbons cavorting in animated-movie style and cutaway views of bearings and other friction points, to demonstrate, in laymen's pictures and terms, the how, what, when, where and why of lubrication.

The book is for distribution at \$3.00 per copy through the Alemite distributor organization, to industry and the automotive, marine and aviation fields. In addition, copies will be made available to engineering and technical schools, designers, engineering societies and other individuals or groups concerned with machinery.

"Alemite believes," the foreword to the book states, "that the era has passed when rule of thumb procedures governed lubrication practice. That today, lubrication is a science founded upon logical analysis, guided by research and tempered by experience."

The book is divided into seven chapters, with self-explanatory headings. These are: "Explaining Petroleum and its Chemistry;" "Considering Refining

(Continued on page 254)





# Specify LADISH, Forged Steel Fittings

Insure economy in piping installations through the use of Ladish Controlled Quality Forged Steel Fittings. Sharp, clean cut threads machined to exacting tolerances, together with the added strength and endurance afforded by Controlled Quality Ladish Forged Steel Fittings assure years of trouble-free, efficient operation and freedom from costly fittings failures.

Machined from drop forgings—Ladish Controlled Quality Fittings give you the ultimate in satisfaction, economy and dependability.

Write for your copy of Ladish Forged Steel Fittings Catalog Volume 2.

- Insure economy in piping installations through the use of Ladish Controlled Quality Forged Steel Fittings. Sharp, clean cut threads machined of exacting tolerances, together with the added grain structure provided by Drop Forging.
  - RESISTANCE TO FATIGUE is accomplished by accurately controlled grain flow for maximum strength at vital points provided by Drop Forging.
  - RESISTANCE TO SHOCK PRESSURES is materially improved by increased dynamic strength and toughness of metal produced by Drop Forging.
  - FREEDOM FROM INTERNAL DEFECTS is assured by the denser, more homogeneous metal structure of Drop Forgings.

UNIFORM WELDABILITY ... FREEDOM FROM LEAKS ... LONGER LIFE

Controlled Quality

FITTINGS DIVISION

LADISH DROP FORGE CO.

C U D A H Y . W I S C O N S I N (MILWAUKEE SUBURB)

District Offices: NEW YORK . PITTSBURGH . CLEVELAND . ST. LOUIS . HOUSTON . LOS ANGELES



API

HOW TO GET//

# BRASS

**MILL PRODUCTS!** 

BRASS, BRONZE AND COPPER...Rod, Bar, Sheet, Strip, pipe, tubing, and wire in Production Quantities. GOVERNMENT-OWNED SURPLUS STOCK

in many standard and non-standard grades, finishes, sizes and specifications AVAILABLE NOW in production quantities

and new surplus declarations are being made daily.



- 1 Estimate, for any convenient period, your production needs in each specification, finish, gauge, etc.
- Write, wire or phone that information to your nearest War Assets Corporation office\* below. We will advise you of the location and condition of the stock you need, estimate possible delivery dates, quote prices and help arrange credit.
- When satisfactory arrangements have been made, we will start shipments.

\*WAR ASSETS CORPORATION is a Reconstruction Finance Corporation subsidiary.
When checking telephone and other directories, simply look up RFC.

VETERANS OF WORLD WAR II: To help you in purchasing surplus property from War Assets Corporation, a veterans' unit has been established in each of our Regional Offices listed below.



# WAR ASSETS CORPORATION

(A SUBSIDIARY OF RECONSTRUCTION FINANCE CORPORATION)

RFC OFFICES (INCLUDING FORMER DEPARTMENT OF COMMERCE REGIONAL SURPLUS PROPERTY OFFICES) LOCATED AT: Atlanta Boston • Chicago • Denver • Kansas City, Mo. • New York • Philadelphia • San Francisco • Seattle • OTHER RFC SURPLUS PROPERTY OFFICES LOCATED AT: Birmingham • Charlotte • Cleveland • Dallas • Detroit • Helena • Houston • Jacksonville Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • Oklahoma City • Omaha • Portland, Ore. Richmond • St. Louis • Sait Lake City • San Antonio • Spokane • OTHER FORMER DEPARTMENT OF COMMERCE REGIONAL SURPLUS PROPERTY OFFICES LOCATED AT: Cincinnati and Fort Worth



EASY TO FABRICATE...

This stock may be fabricated by normal production methods.



# OF ANY LIGHTING SYSTEM...



# Skilled Work Needs Skilled Lighting

Blinding glare and uncertain shadow – by-products of faulty lighting – can mean costly production errors in plant operation. Give workers the help they need... a clear, even distribution of light... Skilled Lighting, the product of Wheeler's 64 years of specialized light engineering.

Wheeler Units are engineered to provide maximum light from standard lamps. Their high reflection factor puts light to work where it belongs – on the job. Their rugged construction insures long service – easy maintenance.

Learn how you can lighten workers' load with Skilled Lighting. Send for catalogs showing complete line of incandescent and fluorescent lighting fixtures. Wheeler Reflector Company, 275 Congress St., Boston 10, Mass. Also New York. Representatives in principal cities.

Distributed Exclusively Through Electrical Wholesalers

GHTING EQUIPMENT



All-Steel
Open-End Fluorescent Unit

Available for two or three 40-watt, or two 100-watt lamps. Broad wiring channel with accessible, enclosed ballast. Can be mounted from chain or conduit, individually or in continuous runs.



RLM Solid Neck Incandescent Reflector Maximum lighting efficiency for either indoor or outdoor use. Expertly designed, ruggedly built. For 75 to 1500 watt lamps.

SPECIALISTS SINCE 1881

Wheeler REFLECTOR COMPANY

AP

# FOR FASTER, LOWER COST, FAR MORE THOROUGH CLEANING

# THE MAGNUS AJA-DIP CLEANING MACHINE (PATENTED)

The use of this unique new machine on a wide range of cleaning operations in many industries insures not only better cleaning at greatly increased speed, but material overall reductions in costs. Its basic principle of moving the work up and down IN the cleaning solution insures a vigorous, rapidly repeated "shearing" action not achievable by any other means.

Variations of this machine are available for automotive service, truck and bus fleet cleaning, railroad cleaning, metal cleaning, typewriter and business machine reconditioning, gas meter cleaning and many other fields.

ing and many other neros.

Let us show you what the Aja-Dip
Machine can do for you.

1921-1946



AJA-DIP JR. FOR AUTOMOTIVE PARTS



AJA-DIP SR. FOR RAILROAD WORK

TWENTY-FIVE YEARS OF SERVICE TO INDUSTRY

MAGNUS CHEMICAL CO. 93 SOUTH AVE., GARWOOD, N. J.

Cleaners • Methods • Machines

RIVNUT FOR FASTENING PLYWOOD TO STEEL

(Continued from page 250)

and Testing of Fuels;" "Studying Refining and Testing of Lubricants;"

"Clarifying Lubrication and Lubricants;"
"Demonstrating Application Problems and Solutions;" "Relating the Story of

Alemite," and, "Defining Purchasing

HARDINGE CO. ACQUIRES RIGHTS
TO MAKE BLM CLUTCH

Manufacturing and sales rights for the

BLM "Auto-Centri" clutch have been

obtained from Hardinge Co., Inc., York,

Penn., from the Automatic Clutch Corpo-

ration of Canada, a subsidiary of the

British Meter Company. The clutch is

available in sizes from fractional horse-

power to 5000 hp for any type of power drive. Bulletin 45 describing the clutch and its application, is available from the

and Selling."

Hardinge company.

A washer head Rivnut, one-piece internally threaded and counterbored tubular rivet which can be upset or headed from one side, has been developed for use in tractor, truck and house trailers for fastening plywood interior walls to steel sections, by the B. F. Goodrich Co., Akron, Ohio. The new Rivnut is in Cadmium plated steel and at present furnished only in No. 6-32 thread for fastening ¼" plywood to 1/16 wall inch steel sections. Company states that the fastening will not vibrate loose, that it is easy to install, is useful as a nut plate for fastening interior trims, and will not pull through plywood because of large diameter head

# ERHEAD CRANES fastening interior tried pull through plywood diameter head.

200 Ton Alliance 100' Span
175 Ton Morgan 54' Span
150 Ton Whiting 30' Span
180 Ton "American" 40' 6"
75 Ton Alliance 37' Span
50 Ton Alliance 37' Span
50 Ton Cleveland 71' 101/2"
50 Ton Shaw 69' 10" Span
40 Ton Alliance 22' Span
35 Ton Northern 22' Span
35 Ton Northern 22' Span
30 Ton Morgan 30' Span
30 Ton Morgan 37' Span
30 Ton Morgan 77' Span
30 Ton Morgan 77' Span
30 Ton PåH 80' Span
25 Ton Bedford 50' Span
25 Ton Bedford 50' Span
25 Ton Whiting 106' Span
25 Ton Whiting 106' Span
25 Ton Whiting 82' Span
20 Ton Whiting 82' Span
20 Ton Morgan 77' Span
20 Ton Alliance 77' Span
20 Ton Northern 60' Span
20 Ton PåH 39' 6" Span
20 Ton Shey 76' 4" Span
20 Ton Shey 76' 4" Span
20 Ton Shey 76' 4" Span
20 Ton Shepard Niles 49' 6"

20 Ton Shaw 76' 4" Span
15 Ton Alliance 50' Span
15 Ton Alliance 50' Span
15 Ton Cleveland 35' Span
15 Ton Cleveland 35' Span
15 Ton Cleveland 35' Span
15 Ton Nies 32' Span
15 Ton Northern 53' Span
15 Ton Northern 53' Span
15 Ton Shaw 82' Span
15 Ton Shaw 82' Span
15 Ton Shaw 82' Span
15 Ton Shaw 77' Span
15 Ton Whiting 74' 81/2" Span
15 Ton Whiting 71' 101/2"
12 Ton Morgan 56' Span
10 Ton Alliance 58' Span
10 Ton Alliance 71' 10' Span
10 Ton Cleveland 38' Span
10 Ton Cleveland 38' Span
10 Ton Cleveland 38' Span
10 Ton Lane 50' Span
10 Ton Lane 50' Span
10 Ton Morgan 39' 5' Span
10 Ton Morgan 39' 5' Span
10 Ton P&H 37' Span
10 Ton P&H 37' Span
10 Ton P&H 38' Span
10 Ton P&H 48' 101/2" Span
10 Ton P&H 48' 101/2" Span
10 Ton P&H 80' Span
10 Ton P&H 80' Span

10 Ton Shaw 68' Span
10 Ton Shaw 58' Span
10 Ton Shaw 88' Span
10 Ton Northern 71' 101/2"
71/2 Ton Erie 70' Span
71/2 Ton P&H 30' 6" Span
71/2 Ton Scullin 71' 101/2" Span
71/2 Ton Scullin 71' 101/2" Span
71/2 Ton Shepard 36' Span
6 Ton Shaw 23' Span
5 Ton Scullin 71' 101/2" Span
5 Ton Champion 37' 6" Span
5 Ton Milwaukee 39'8" Span
5 Ton Milwaukee 39'8" Span
5 Ton Milwaukee 66' 9" Span
5 Ton Milwaukee 70' Span
5 Ton Milwaukee 70' Span
5 Ton Northern 49' 6" Span
5 Ton Shepard 40' Span
5 Ton Whiting 80' Span
3 Ton Shepard 40' Span
3 Ton P&H 46' 4" Span
3 Ton Whiting 57' 3" Span
3 Ton Whiting 57' 3" Span
2 Ton Detroit 28' Span
2 Ton Shepard-Niles 18' & 14"
11/2 Ton Cleveland 25' Span
1 Ton Curtis 24' Span

Take advantage of the ECONOMY service by telephoning to us collect, which will enable us to discuss your requirements and present our suggestions.

In addition to overhead cranes we can supply all types of shovels, cranes, draglines, tractors, for practically everything in the construction equipment field. May we have your inquiries?

# ECONOMY CO., Inc.

49 Vanderbilt Avenue, New York 17, N. Y.
Telephones: MUrray-Hill 4-2294, 4-2893, 4-2295, 4-2844, 4-2296, 4-8292

N. Y.

### AIM TO SPEED-UP SURPLUS DISPOSAL

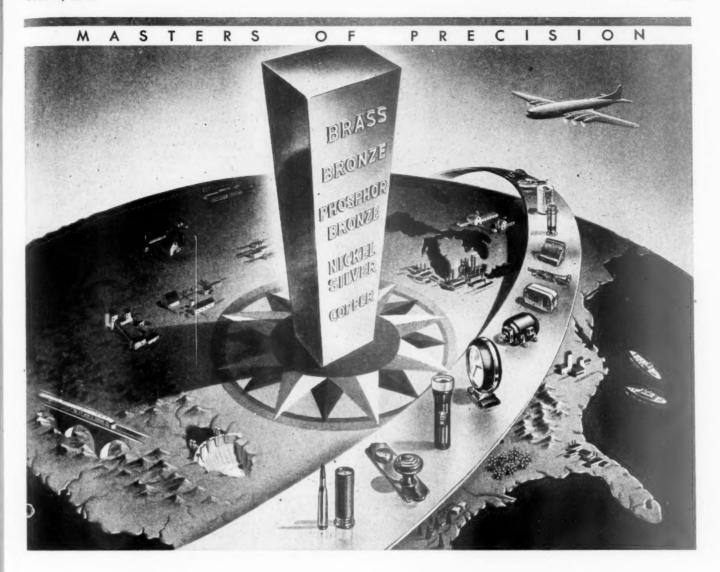
Speed-up of disposal through simplified administration and broader authority in the regional offices is the objective of the Surplus Property reorganization now under way, according to Major General Glen E. Edgerton, Vice Chairman of the War Assets Corporation.

Policy-making and operational functions formerly performed by several agencies will be consolidated under the War Assets Administration, which was activated March 25.

The War Assets Administration will probably have three principal divisions. Special groups will assist in expediting transactions in volving Government agency requirements, veterans' preferences, and other priority claimants.

Present outlets will be maintained and more will be added as practicable to effect as wide and equitable distribution as possible, General Edgerton said, pointing out that in general it is impracticable and costly to move material from one location to another.

Reminding the Committee that in some (Continued on page 256)



# Better Metals for Many Uses

Precision-made brass and other Western copper-base alloys will serve important functions in a large number of tomorrow's

new and improved products. Manufacturers seeking alloy metals to meet very exacting requirements find that Western, with mills at East Alton, Ill., and New Haven, Conn., delivers as specified... in sheet, strip, long coils or stamped parts.

We may be able to serve you now. We would appreciate an opportunity to discuss your requirements for brass and other copper-base alloys.



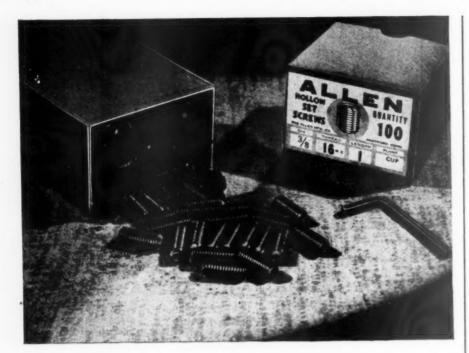
# WESTERN BRASS MILLS

DIVISION OF OLIN INDUSTRIES, INC.

East Alton, Illinois

BRASS . BRONZE . PHOSPHOR BRONZE . NICKEL SILVER . COPPER





# Here, you get more than Allen-type screws

For the HOLDING-POWER you mean to buy, get the Allen make of hollow screws — not merely the Allen type. Get them boxed, labeled, identified as in the photo above. Here is packaged Strength and Dependability, authenticated by a 34-year record. Equal to any critical tests;

yes, well above the qualifying standards of the "or equal"

clause in specifications.

Your supply-source is your nearby Industrial Distributor, the ALLEN Distributor, — Master Expediter of orders. He stocks for your allround convenience a full line of

ALLEN HOLLOW SET SCREWS • PRESSUR-FORMD CAP SCREWS • TRU-GROUND SHOULDER SCREWS • PIPE PLUGS • SQUARE HEAD SET SCREWS • TRU-GROUND DOWEL PINS • FLAT HEAD CAP SCREWS • TAP EXTENSIONS



THE ALLEN MANUFACTURING COMPANY HARTFORD, \* ALLEN \* CONNECTICUT, U.S.A.

(Continued from page 254)

categories of materials shortages exist both in the military and civilian economies, General Edgerton said that there was widespread misunderstanding as to the amounts of surplus goods in heavy demand. Further, some items are not suitable for commercial purposes; for example, Army trucks which were designed for military purposes, are not all suitable for farm use. Lumber, hardware, construction equipment, textiles and other surplus goods can, however, meet urgent civilian requirements, he added.

# ISSUE MINIMUM SPECIFICATIONS WIREBOUND BOX MANUAL

To assure shippers of safe packing of their products and to help conserve the critical lumber supply, the Wirebound Box Manufacturers Association announces publication of a new minimum specifications manual.

The manual, which is the result of a year's work by the Association's Design, Specification and Quality Committee, will be distributed to wirebound box manufacturers throughout the country who have volunteered to promote the use of these specifications, drawn up for the packing of nearly every type of industrial product, from light ceramics to 500 lb. engine blocks.

Cooperation in meeting with these standard specifications is expected to reduce to a minimum both shipping damage losses and "overdesigning" of containers—which involves use of more or heavier box veneer than necessary, L. S. Beale, secretary of the Wirebound Box Manufacturers Association, explained.

# BOOKS ON PLASTICS AND PLASTICS MOLD ENGINEERING

Circular from the American Technical Society, Drexel Avenue at 58th St., Chicago, Ill., describes two books on plastics. Title of one is "Plastics" by J. H. duBois—third revision, 447 pages, which describes various plastics, molding and extrusion, finish, selecting materials, low pressure laminating, design, synthetic rubber and other subjects The second book is "Plastic Mold Engineering", 494 pages, dealing with molding, product design, types of molds, toolmaking equipment, materials, mold design, and other pertinent subject matter.

# JESSOP STEEL FORMS SPECIAL ALLOY DIVISION

T. W. Pennington, vice president, Jessop Steel Co., Washington, Pa., announces the formation of a new Special Alloy Division to advise users of alloy steels in their reconversion programs. The primary function of the division will be to recommend and develop special alloy steels to fulfill requirements where ordinary steels will not give satisfactory performance.

# BAYFLEX...a new Bay State development

### THE AMAZINGLY SAFER CUT-OFF WHEEL

The New Bayflex Wheels, incorporating cotton fibres in abrasive bonding, are Bay State's answer to the demand for cut-off wheels that combine greater safety with faster, freer cutting action and minimize the operator's fear of wheel breakage.

Greater safety results from the increased toughness and balanced flexibility of an entirely new bonding material. And in addition to providing fast cutting, this balanced flexibility permits side grinding and close following of contours with the danger of wheel breakage greatly reduced - an amazingly safer wheel.

Already, in many foundries and other metalworking plants, these advanced wheels are setting new performance records in cutting-off non-ferrous metals. Write for recommendations on how the new safe-operating, timesaving Bayflex Wheels can benefit your production.

### BAY STATE ABRASIVE PRODUCTS CO.

27 Union Street, Westboro, Mass.



Top Performance Consistently Duplicated





GRINDING WHEELS HONING AND SUPERFINISHING STONES PORTABLE SNAGGING WHEELS











AND POINTS Q CUT-OFF WHEELS (0) INSERTED-NUT DISCS (2) AND CYLINDERS







# MERION SELECTS SUNROC

THE MERION CRICKET CLUB. internationally known for its championship tennis matches, depends on Sunroc Water Coolers. This fine, old club near Philadelphia sensed the need of supplying cool, refreshing drinking-water to members, guests, and staff...and Sunrocs were its natural choice.

Merion selected Sunrocs, just as have representative American business and industrial concerns, because of their competent suitability for the job to be done . . . providing cool drinking-water at places where people gather, or are employed.

Over the years, Sunroc Water Coolers have demonstrated their superiority in design and construction . . . their unfailing dependability and low cost of operation. Intensive specialization in this one, highly perfected product has paid off. It's the finest water cooler on the market today, and is now offered in a full range of models. Write for the Sunroc story. Dep't P-4, Sunroc Refrigeration Company, Glen Riddle, Pa.



"There's nothing like a cool drink of water"

Water Coolers GLEN RIDDLE, PA.

# Declares Gas Turbine Age Near

Use as Central Station Power Plant Foreseen

### ENGINEER DECLARES AGE OF GAS TURBINE IS NEAR

Industry is rapidly moving toward the realization of a dream engineers have held for centuries-utilization of the many potential advantages offered by the gas turbine as a prime mover, John R. Carlson, Westinghouse engineer, told members of the Panhandle Section of the American Institute of Electrical Engineers at Technical College, Amarillo, Texas, recently.

Mr. Carlson declared that a great deal of research lies between present-day gas turbine performances and the efficiencies necessary to bring dependable and economical service to various fields of industry and transportation. But the swift development of the gas turbine in aviation during the war provides proof that it is at last coming into its own and its advantages eventually can be extended to other fields.

### Lists Gas Turbine's Advantages

Chief advantages of the gas turbine, he pointed out, lie in its simplicity of design and operation, its compactness and relatively light weight. The next role of this comparatively new prime mover well may be to power ocean liners or war vessels. First step in accomplishing this task must be the perfection of a reversible-pitch propeller to facilitate moving a ship either forward or backward.

Other uses for the gas turbine, Mr. Carlson predicted, would include its installation in locomotives; as auxiliary use on planes to provide lights, regulate wing flaps and operate the landing gear; as central stations for provision of power for electric current; and as stand-by turbines to provide added power for heavily-loaded lines during busiest hours.

### As Power Plant

Widespread use of the gas turbine as a central station power plant is foreseen only when the higher thermal efficiency at higher temperatures of which it is capable as compared with that of a steam turbine, justifies the added fuel cost. At temperatures above about 1,000 degrees, steam turbines rapidly fall off in efficiency, but gas turbines continue to increase in efficiency as operating temperatures rise.

Progress of the gas turbine was stymied for a long time by the fact that there were no metals known that would withstand the combination of high temperatures and tremendous mechanical forces necessary for such turbines to operate at high efficiency. War stimulated research was responsible for the perfection of alloys that meet this requirement and which cleared the way for greater advancement along other

Development of more durable metals has made it possible to build up considerably more pressure within the turbine, and consequently, to concentrate more power into a still smaller space. trend leads to decreased original cost per turbine because of the fewer materials going into it, and also reduced operating cost through better utilization of fuel

### PLASTIC FINISHING INFORMATION

Bulletin No. 6, Technical Information on Lea Products, issued by Lea Mfg. Co., Waterbury 86, Conn., describes the Lea method of plastic finishing, specifically dealing with materials to be used for finishing cast phenolic products, acetates, nitrates, and acrylics, and the buffing speeds to be used with thermosetting materials and with thermoplastic materials. It states that speeds of 4000 to 5000 s. f. m. will generally be found satisfactory for buffing operations on the former, whereas on thermoplastics, effort should be made to minimize the frictional heat, and that it would be best to keep the buffing speeds in the range of 3000 to 4000 s. f. m.

Booklet of 34 pages on the Lea method of polishing, buffing and burring, metals, plastics, wood, etc., also is

available on request.

### 1 1 1 FIBERGLASS BROADENS BUILDING INSULATION DISTRIBUTION

To service enlarged demands and broaden distribution of its materials to the construction industry, Owens-Corning Fiberglas Corporation, Toledo, Ohio, has completed arrangements with the Flintkote Company and with the Armstrong Cork Company to distribute Fiberglas building insulation through their national sales outlets. The arrangements were effective in January 1946.

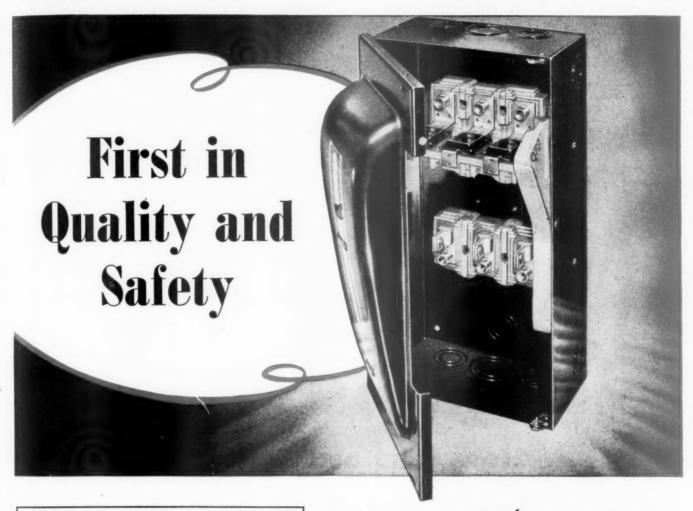
United States Gypsum Company, which pioneered in the distribution of Fiberglas building insulation as "Red Top" insulation, will continue to sell the materials through U. S. G. dealers who have

handled them since 1933.

Like U. S. Gypsum, Flintkote and Armstrong will sell the flexible Fiberglas building insulations, including bats and rolls, and blowing and pouring wool. Fiberglas materials distributed by Flintkote will be known as "Flintkote Insulating Wool"; the Armstrong line will be called "Armstrong Insulating Wool".

### 1 1 1 DATED PASSENGER CAR TIRES

Announcement is made by the Dayton Rubber Manufacturing Co., Dayton, Ohio, that all passenger tires manufactured by it will have the month and year of manufacture molded into the sidewall, to the right of the serial number. For instance, the figure 446 would indicate that the tire was made in April



# BULLDOG SUPERBA AND CIRCUIT MASTER PANELBOARDS

Superba Lighting Panel-boards comprised of symmetrically designed bakelite units incorporate more improved operating and safety features, greater flexibility for all wiring systems and finer appearance than is procurable in any other Panelboard. Available in panel sizes ranging from 4 to 40 circuits.





Narrow Column Type Circuit Master (circuit breaker) Panels 8½" wide or less for installing between the flanges of H columns ... saves usable working space. Special design features simplify installation problems, cut wiring time and reduce wire and conduit runs. Available in panel sizes from 6 to 32 circuits.

# BULLDOG Vacu-Break SAFETY SWITCHES. WITH "CLAMPMATIC" CONTACTS

As industry reconverts to competitive peacetime production, manufacturers—large and small—are insisting on the best circuit protective devices available to keep power on the job.

That's why the demand for BullDog Vacu-Break Safety Switches with "Clampmatic" Contacts has now reached a new all time high.

First in the field — in quality and safety — the many advanced and exclusive features of these BullDog switches will help you speed production and reduce maintenance costs by carrying your loads more safely and efficiently.

### BETTER FOUR WAYS

- Formed "Bakelite Arcing Chambers" confine and suffocate arcs
  . . . prevent burning and pitting of Contacts.
- 2 "Clampmatic" feature assures contacts tight as a bolted connection . . . reduces heating under continuous loads.
- 3 Quick action mechanism assures positive "ON" and "OFF" operation.
- 4 Attractive, modern cabinets with ample wiring room—yet compact. Equipped with Solderless Wire Grips.

# BULLDOG

Detroit 32, Michigan. In Canada: BullDog Electric Products of Canada, Ltd., Toronto. Field Offices in All Principal Cities.



Also Manufacturers of
Circuit Master Breakers — SafToFuse
Panelboards — BUStribution Duct, for
"plug-in" power—Universal Trol-EDuct, for flexible lighting—Industrial
Trol-E-Duct, for moving "loads."

BULLDOG ELECTRIC PRODUCTS CO.



# How Hartford-Empire keeps a moving inventory in sharp focus

Another example of how Standard Register's Systems keep management informed more accurately, more quickly

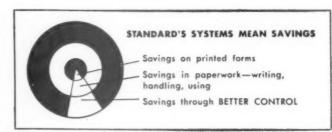
Inventory Moves. It must move. And management is recognizing, more and more, the need for an accurate, sharply-focused picture of moving inventory at all times ... to keep production in high gear ... to avoid excessive capital investment ... to give management, from top to bottom, up-to-the-minute information on which to act.

That's why the Hartford-Empire Company did as so many leading companies in American industry are doing, today. They called in Standard Register representatives to apply Standard's tested Paperwork Simplification techniques.

System procedures, writing methods, and form designs were methodically analyzed. Recommendations for improvements were made, accompanied by revealing "motion" pictures—Standard Register's visual flow charts.

Hartford-Empire executives immediately put these recommendations into operation. Top management quickly

realized it was getting information on inventory with greater speed, completeness and accuracy. In addition it found that savings were being effected...savings in the processing of paperwork...savings through better over-all control by management.



Opportunities for increased efficiency and reduced costs through better control exist in almost every type of business, not only in inventory but also in all other primary functions. Talk to a Standard representative. Learn how Standard's paperwork simplification studies and the use of Standard's Kant-Slip Continuous Forms may mean better control, big savings in your business.



WRITE TODAY for a copy of Formcraft Digest D-191, read more about this system. See how Standard's techniques get results. Compare with your own inventory control.

THE STANDARD REGISTER COMPANY

Manufacturer of Record Systems of Control for Business and Industry
404 CAMPBELL ST. • DAYTON 1, OHIO

Pacific Coast: Synset McKee-Standard Register Sales Co., Oakland, California. Canada: R. L. Crain Limited, Ottawa. Landon: W. H. Smith & Son, Ltd.

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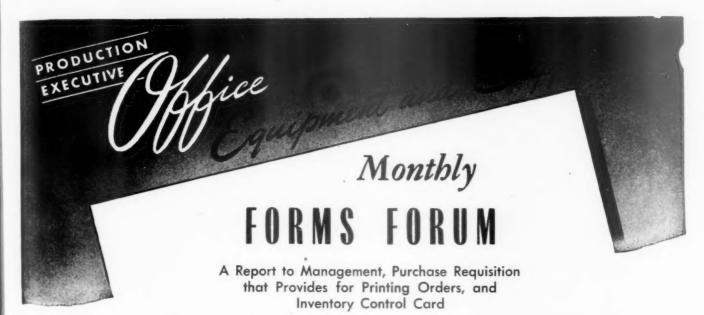
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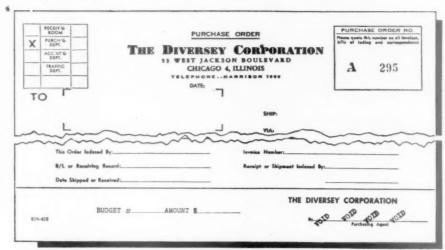


### Report to Management

N the course of selecting the accompanying purchase department forms for reproduction in the Forms Forum, Purchasing Agent J. J. Pelham, The Diversey Corporation, 53 W. Jackson Boulevard, Chicago, Ill., considerately chose those which he felt had added features over the average design used in industry, and hence of practical value and interest to readers of the Forum. The presentation includes a Report to Management on monthly purchases, and a purchase requisition form and purchase order form which offer ideas different from any previously shown. Following is Mr. Pelham's description of these features:

"Keeping in mind that management

(Continued on page 262)



This is purchasing department's copy of purchasing order, as indicated by "X" in upper left hand corner. Another feature is the line at the bottom showing "Budget #—— Amount \$——."

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15,000	16,000	14,000	15,000	15,000	Product B	60,000	60,000
140,000	120,000	100,000	140,000	120,000	Product C	500,000	480,000
86,000	88.000	92,000	88,000	90,000	Product D	354,000	360,000
20,000	20,000	20,000	20,000	20,000	Product E	80.000	80,000
560,000	580,000	560,000	560,000	560,000	Product F	2.260.000	2.240.000
270,000	250,000	270,000	250,000	250,000	Product G	1.040.000	1.000.000
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Report to Management prepared by purchasing department of The Diversey Corporation. This reproduction was made from binder containing four monthly reports. The individual cards are 5½" wide and 8" long. Legal size folder (binder) is used which accommodates records for entire year.



as most typists do, is basically wrong, tedi-ous and harmful. By permitting correct posture, automatic line-pointing, forward EYE LEVEL reading, Copy-RIGHT shortens reading distance, improves visibility, assures greater accuracy, eliminates eyestfain.

Result: typewritten matter that carries quality, neatness, preslige.

No Twist, No Turn No Squint, No Squirm Copy-RIGHT keeps Typists fresh and alert throughout the day, slashes typing costs. Self-support. ing, not permanently hold papers up to 12", 16", 20", 25", attached, can be instantly moved from one typewriter or desk to another.

Try Copy-RIGHT at our risk. Put it to the test in your own offices. MAIL COUPON NOW!

Six Model Sizes

30", 36" wide

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like to		ture pl	offi



### (Continued from page 261)

should be informed about purchasing department activities, we prepare-monthly -a series of records which include principal raw material purchases, finished goods purchases-where the item is used for retail as purchased-dollar volume purchases by supplier and/or totals, and what happened, and also the accumulation for the year to date."

The cards used for the monthly report are 51/2" wide and 8" long, each showing current data as well as recapitulation of "Purchases" and "Contracted Requirements." The cards overlap, revealing each month's figures, the recapitulation

DISTRIBUTION	PURCHASE REQUISITION (Flours Mole, Out Wills Ink.)						
	Actual size 6" x 84"	Date					
2	*The Following Items Are Required for Which You						
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Paper Stock	Padded7	Punched?					
Color-Original	No. Per Pad	What Kind					
Duplicate	Where?	Size					
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422-414		THE DIVERSEY CORPORATION					

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a monthly calculation showing the amount of purchase liabilities as of a given date.

"This information, or report, is made up as illustrated by the accompanying example, a legal size folder being used to enable handling of an entire year's secord. It can easily be seen that such a setup will give the busy executive, at a glance, pertinent information which is valuable in company operations. The picture shows, month by month, exactly

appearing on the last report. These cards are mounted in a special binder made by the U-File-M Binder Mfg. Company, Syracuse, N. Y.

"The purchase requisition," states Mr. Pelham, "has been designed so that only one form is necessary to cover all purchases within our organization. In particular, we like the idea of the distribution box in the upper left-hand corner

(Continued on page 270)

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# Sounder, Simpler Paper Work Methods for these Major Functions



# Our two free booklets give all the details

Everyone in business wants to get things done faster and more simply, if he doesn't have to sacrifice accuracy and control to do it.

With Mimeograph\* stencil duplication, paper work can be speeded up, streamlined. And at the same time, there is surer control all along the line.

It is the flexibility of Mimeograph duplication and its easy-to-read, always-to-be-depended-on results that make this possible.

To find out how Mimeograph duplication works in two major applications, send the coupon for our free booklets describing step-by-step procedures for handling 1) Purchasing, Receiving and Inspection, and 2) Complete Production Control.

Why not find out about these efficient new systems now? It will be to your advantage.

# Mimeograph duplicator

\*MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office



A.	B.	Dick	COMPANY,	Dept.	P-446,	720	W.	Jackson	Blvd.
Ch	iica	go 6.	Illinois						

Please send me your free booklets:

- ☐ "Complete and Accurate Control over all Purchased Parts and Raw Material."
- "Production Control Paper Work"

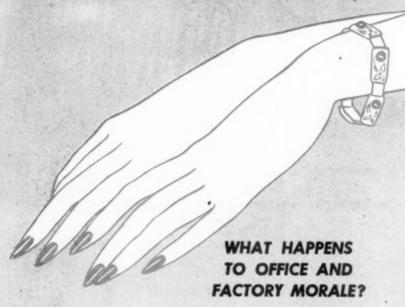
NAME....

ADDRESS....

TY.....STATE.

# WHEN FIVE O'CLOCK HANDS HAVE SIX O'CLOCK DATES...

Women's bands constitute a vitally-important factor in office and factory work. Smears, stains, grease and soilage from typewriter ribbons, carbon paper, duplicating machine operating and hundreds of other work-a-day jobs are frequently causes of skin irritations, embarrassment and absenteeism. Hands uncared-for are a business liability.



While you can't remove these causes, you can alleviate their effects and give morale a big boost by having containers of Rainbow Hand Cleaner handy in your lavatories and rest rooms. Pure, non-irritating Rainbow contains a number of the same superb cleaning and skin-soothing ingredients that are used in many of the finest soaps, cosmetics and lotions. It whisks away all embarrassing signs of five o'clock hands that frequently dull the pleasure and glamor of six o'clock dates . . . cleans and softens the skin.

Ask your stationer or the Columbia office nearest you for



# RIBBON & CARBON MANUFACTURING CO., INC.

Main Office & Factory: Glen Cove, L. I., N. Y.

Kansas City, Mo.
 Chicago
 Detroit
 Milwaukse
 Nashville
 Philadelphia
 Pittsburgh
 Portland, Oregon
 (Harris-Moors Co.)
 Atlanta
 Also: London, England
 Sydney, Australia

### MERGER OF AETNA AND HOWARD PAPER COMPANIES

Through the merger of The Aetna Paper Company, Dayton, Ohio, and The Howard Paper Company, Urbana, Ohio, a consolidated corporation has formed under the name of Howard Paper Mills, Inc., according to announcement made recently by officers of these wellknown organizations.

The consolidation of these concerns



Harry Legge President, Howard Paper Mills

under the name of Howard Paper Mills, Inc., creates one of the largest manufacturers of quality paper in the United States. Howard Paper Mills, Inc., in association with its subsidiaries, The Maxwell Paper Company, Franklin, Ohio, and The Dayton Envelope Company, Dayton, Ohio, will continue as in the past to produce the same complete line of fine business and commercial

The Howard Paper Company division manufactures Howard bond,



Exec. Vice-President

mimeograph and writing papers. The Maxwell Paper Company division makes Maxwell bond, offset and mimeograph papers. The Aetna Paper Company division produces rag-content Correct and other bond and ledger papers, and The Dayton Envelope Company division makes envelopes in all styles, grades and sizes

Harry A. Legge of Urbana, who succeeded the late Colonel Howard as president, remains as head of the consolidated corporation. Other officers are: W. B. Zimmerman of Franklin, Ohio, executive vice president; Charles F. Goodenough and K. P. Geohegan, both Dayton, vice presidents; Eugene H. Hoffman, Lebanon, Ohio, treasurer; Joseph A.

(Continued on page 266)

APRIL

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MOOR

# Can I have till next Tuesday?

Sometimes a department seems to operate on a turtle's schedule. Nothing ever goes out on time.

The payroll is late, the comparative sales report is late, the trial balances and the production schedules are late. Meanwhile, overhead mounts, tempers shorten, and even the best customers grow impatient with long delay.

Moore Business Forms can cut

radically into lateness and overtime by designing forms for specific purposes. The whole office procedure can be speeded up, often by a single change.

Moore forms reduce over-all cost, as well. The question to ask of your business operation is "How much does it come to altogether?" Count salaries, paper, carbons, forms, machines. Moore forms can lower the figure as much as 20% to 50%.

To see how, get in touch with headquarters of your nearest Moore division, as listed below, or its local office. Moore Business Forms, Inc., consists of companies long under Moore ownership, now also under the Moore name. Moore stands ready to supply you with everything from a simple sales book to the most intricate multiple-copy form.

AMERICAN SALES BOOK CO., INC., NIAGARA FALLS AND ELMIRA, N. Y.
PACIFIC MANIFOLDING BOOK CO., INC., EMERYVILLE; LOS ANGELES, CALIF.
GILMAN FANFOLD CORP., NIAGARA FALLS, N. Y.
COSBY-WIRTH MANIFOLD BOOK CO., MINNEAPOLIS, MINN.
MOORE RESEARCH & SERVICE CO., INC., NIAGARA FALLS, N. Y.
SOUTHERN BUSINESS SYSTEMS, INC., ORLANDO, FLA.
MOORE BUSINESS FORMS, INC. (New Southern Div.), DALLAS, TEX.; ATLANTA, GA.

In Canada—Moore Business Ferms, Ltd., succeeding Burt Business Forms, Ltd., Torente Western Sales Book Co., Ltd., Winnipog and Vancouver National Sales Check Book Co., Ltd., Mentreal MOORE BUSINESS FORMS, INC.

ADV. BY H. W. AYER

APRIL

Cobey, Dayton, secretary; and K. C. Koehler of Dayton, controller.

Directors also include: Eunice Howard Dane, Loretta H. Howard, Madeleine R. Hoffman, Blanche C. Hoffman, Stanley M. Rowe, and Herman W. Santen.

"No changes in personnel or operating policies are contemplated", President Legge commented. "Nation-wide distribution of our products will be continued through our established distributors, and our sales offices in New York City and Chicago will be maintained."

The Howard Paper Company and The Aetna Paper Company were organized more than forty years ago by the late Colonel H. M. Howard, well known industrialist and owner of Stagehand and other famous race horses, trained by Earl H. Sande, nationally known jockey. From a humble beginning, Colonel Howard developed his various paper mills into important factors of the paper industry.

Management of Howard Paper Mills, Inc., and its subsidiaries will continue under the leadership of executives who were closely associated with Colonel Howard during his lifetime in the operation of the four mills, which, in the aggregate, employ approximately 1,000 men and women.

# How often do you TAKE A LOOK AT YOUR RECORDS?

Fifty times a day to once a year might represent the extremes between hard-working control forms and less active but equally valuable documents and similar long term records. Threatened on one hand by the wear and tear of constant handling and on the other by the ravages of time, your records need the protection of strong, durable cotton fibres used in making WESTON papers for business records.

For those "key" records of more than transient importance—records of production, materials, accounts, correspondence and sales as well as légal, financial, insurance and other long term records, see that your supplier selects a cotton fibre content record, ledger, bond or machine accounting paper from the complete WESTON line,

Byron Weston Company, Dalton, Massachusetts.



If it's worth keeping, keep it on a WESTON Paper

Weston Makers of Papers for Business Records



### TWO NEW RECEPTION CHAIRS



Construction is all-steel

The Sturgis Posture Chair Company, Sturgis, Michigan has announced the addition of two reception (side) chairs to their 1200 Executive chair line — #1225 arm chair, illustrated, and #1275 without arms.

Construction is all-steel — with all joints welded and smoothly finished. Seat pan in steel. Form fitting padded back rest. Backs and seats well filled with rubberized curled hair. (Arm chair #1225 has 134" wide padded arm rests.) Leatherette upholstery. Finish on steel is baked-on-enamel (infra-red process.) Steel glides securely welded into legs. Available in a choice of colors of leatherette finish.

To Se last w nience Thi when

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Half a Century of Service ...

To Secretaries, Underwood has long meant the very last word in typewriter performance and convenience of operation.

This confidence started that day fifty years ago ... when Underwood's forward-minded founders hit upon the design that made the typewriter possible in its present form.

It freed typists forever from struggling with the blind-writing handicap of its predecessors.

Visible Writing let typists see the progress of their work for the first time . . . everything from "Dear Sir" to "Yours truly."

The speed and efficiency of this revolutionary machine was regarded as one of the wonders of the day!

Business clamored for Underwoods . . . and yearly production zoomed from 500 to hundreds of thousands. But, Underwood's pioneers have never stopped improving.

This spirit . . . enriched by their inventive genius and engineering talent . . . made Underwood the "Typewriter Leader of the World" . .

. . won Underwood new laurels for its mass production of carbines and other war essentials.

... will again thrust Underwood ahead of all competition in the quality and quantity of its production.

Today's Underwood . . . a masterpiece of type-writer engineering . . . challenges all other machines to match its brilliant, effortless performance.

It has advantages that every secretary likes and looks for in a typewriter . . . touch, speed and accuracy . . . with a score of time and effort-saving features to brighten and lighten her day.

It symbolizes the spirit of the entire Underwood organization to serve . . . to help speed your day's business . . . to remain "Faithfully yours."



UNDERWOOD CORPORATION

One Park Avenue New York 16, N. Y.

Copyright: 1946 Underwood Corporation

Underwood TYPEWRITER LEADER OF THE WORLD



# Covers the INDUSTRIAL Front!

There is not one industrial spot on this map where Plant Purchasing Directory is not found and used in the offices of industrial buyers. Found, because its circulation covers every important industrial buyer in the country—Used, because it is made up for the convenience of industrial buyers. They find it a convenient, usable directory that tells them immediately what they need to know about buying sources. Keep it handy.

A CONOVER-MAST PUBLICATION
Formerly Plant-Production Directory

# PLANT PURCHASING DIRECTORY

333 North Michigan Avenue, Chicago 1, Illinois

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Plas-7, inch sliithe Fr. Avondal characte sional g easy-to-cision, s easy adj genuine

# CONTROLS INK FLOW ON STENCIL DUPLICATORS

Mounted sheets known as Shallcross Master Control Sheets, to control ink flow on all stencil duplicators, are announced by The Shallcross Co., 48th and Grays Ferry Road, Phriladelphia, Pa. Sheets are mounted over the ink pad of cylinder, and are said to prevent excess ink clinging to stencils when removed from the machine. They are also said to reduce the amount of ink per impression, decrease drying time, penetration and offset, and to overcome the matter of temperature changes in ink. Sample sheet will be furnished on request.

# TRACING REPRODUCTION MACHINE ANNOUNCED BY PEASE

Dry direct process machine known as the Pease "88-R" Printing and Developing machine, which is claimed to produce fine quality whiteprints in cut sheets or



Operator just has to feed in tracings and sensitized paper

rolls in one continuous operation at a speed of 30 ft. per minute, is announced by the C. F. Pease Co., Chicago, Ill. The machine is said to be easy to operate. All operator has to do is to feed in the tracings and sensitized paper, either cut sheets or rolls-virtually everything else is automatic-and the finished prints are delivered in a matter of seconds. Mechanical speed control of the machine is instantaneous and positive. Ammonia fumes used for developing (thoroughly confined) are controlled by a selective ammonia feed, which is either manual or automatic as desired.

# TEN-INCH UNIVERSAL PLASTIC SLIDE RULE

1 1 1

Plas-Ten is the name of a new teninch slide rule in plastic announced by the Frederick Post Co., Hamlin & Avondale avenues, Chicago, Ill. It is characterized as a snow-white professional grade instrument with razor-sharp easy-to-read graduations, featuring precision, smoothness of operation and quick, easy adjustment. It is housed in sturdy, genuine heavy leather case.



Prestige, a valuable asset to any business, shouldn't be tampered with for a fraction of a cent per letter. So, if you have any doubt as to the prestige-building power of your present letterhead paper, examine its watermark.

The watermark should reveal that your letterhead is printed on cotton fibre paper . . . the finest papers are made from cotton fibres. It should also reveal the exact cotton fibre content . . . the more cotton fibre, the finer the paper. Finally, it should reveal who makes it . . . like Fox River, who have made fine cotton fibre content papers since 1883.



# Now! Get COPIES of ANYTHING — in a Jiffy!

... Right in your own office! New, errorproof method saves time, typing, handcopying, drafting and checking!



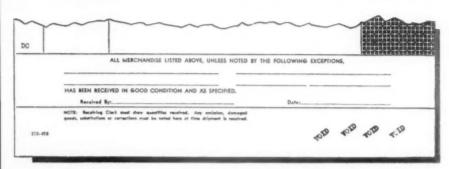
## Anyone can Easily make copies of LETTERS, BLUE PRINTS, CHARTS, PICTURES, VALUABLE PAPERS, FINANCIAL DATA, CLIPPINGS, CONTRACTS (over 100 others)

Here's a way to expedite work in every department of your business: Use quick, accurate APĒCO photocopies to circulate important data, to prevent costly errors, and to safeguard valuable originals. Yes, with APĒCO you can now have all the copies you want—when you need them! APĒCO copies anything! In a recent nationwide survey, business executives reported 137 different uses for APĒCO. With this handy unit, anyone can turn out accurate, permanent copies at 1-a-minute speed, and at very low cost—even less than the price of a phone call! No darkroom or technical knowledge needed—even a boy or girl can operate APĒCO—"America's Most Widely Used Photocopy Equipment." Get full information, TODAY!

Send for this handy file of information! FREE!	APECO PHOTOEXACT
AMERICAN PHOTOCOPY EQUIP 2849 N. Clark St., Dept. NG46 Chicage 14, Ill. Send me, without obligation, complete information about Phot its uses in every department—in page, fully illustrated book.	, your file of
NAME	
COMPANY	
TITLE	
ADDRESS	
CITYSTA	TE

(Continued from page 262)
which insures proper handling in the
mail room, and also will place the requisition before the persons having control

dependent receiving reports be submitted, and the fourth copy of the purchase order, in this case, is sent to our warehousing department or to the production depart-



Receiving Department copy of Purchase Order - See text.

of the expense to be approved. It will also handle printing purchases without an additional form.

"Copies of the purchase order are made for the accounting department, purchasing department and receiving room. The receiving room copy eliminates the necessity of a sparate receiving report on items coming into the office stockroom. On plant operations we prefer that inment where raw materials have been requisitioned.

# Inventory Control Card A Practical System

PURCHASING Agent Roy F. Sielisch, General Television and Radio Corp., 2701 Lehmann Court, Chicago, Ill., furnished the following forms, which include inventory control card, purchase change order, production change order, and production orders or "parts sheets", and purchase order form, all of which

differ materially from forms previously presented. This fact, along with Mr. Sielisch's statement that the system is "relatively simple" offers a presentation of double interest. His explanation of the forms follows:

"Our purchase orders are typed in four (Continued on page 272)

	General TELEVISION and RADIO CORP.  2701-17 LEMMANN COURT CHICAGO 14. ILLINOIS TELEMENTE DIVERSET OTER  ACTUAL Size 06" x 11"				Nº 1500  THIS NUMBER HUST APPEAR ON ALL INTEGES FULL APPEAR AND SING OF MOUNTS  DATE  PROD. NO.  SHIP VIA  F. Q. B.  TERMS		
DELIVERIES	OUR PART NUMBER	YOUR PART NUMBER	DESCRIPTION		UNIT	TETAL	
QUANTITY						-	

How to keep up with your new machines



With new office machines coming ... new typewriters, both manual and electric ... new bookkeeping machines ... new office duplicators ... the tempo of office work will step up considerably. Your results will be the highest quality yet attained. Which is a very good thing in itself.

Remember, however, that two good things are better than one. So use paper that will complement the performance of these new machines ... paper that has the character, quality, strength and special printing surfaces so necessary to meet the demands of new machines.

Our portfolio "Eastern Fine Papers for Business" will convince you that our Atlantic and Manifest lines of bond, ledger, duplicator and mimeo papers will certainly keep up with your new machines. Send for it, today.

Allantic Bond

MADE BY
EASTERN CORPORATION
BANGOR, MAINE

# COMMERCIAL FORMS AND SYSTEMS



An ally of modern management, Reynolds and Reynolds is one of the world's largest suppliers of printed or lithographed control and operational forms.

- CARBON INTERLEAVED SYSTEMS
- . BUSINESS MACHINE FORMS
- PAYROLL CHECKS and SYSTEMS

Effective Advertising
Literature, Distinctive
Stationery and Business
Forms of every kind

REYNOLDS
REYNOLDS
COMPANY • DAYTON 7, OHIO
Established 1866

SALES OFFICES IN

(Continued from page 270)

						TAR		
					No			
MODEL	CHASSIS	CABINET	DATE		IJAN.			
N. PART NO.	Dε	SCRIPTION	DRDER NO	IN STOCK	V UNIT	1	TUTAL	1
								T
	Actual Size 84"	x 14".						

Requisitions for production material are not used. Production orders are issued on these "parts sheets" on which shortages are noted and orders placed accordingly.

MODELS AFFRO	D	CHANGE ORDER NO.
		DATE
DESCRIPTION OF CHANGE:	- Actual 3	Size 21" x 11"
	Tarre	AA~~~
		~ ~ ~
Change following		
Production Orders	Change Notices	Issued to: wcknowledged
Production Orders	Change Notices	I sund to: Acknowledged
Production Orders	Change Notices	Issued to: acknowledged
Production Orders	Change Notices	Issued to: acknowledged
Production Orders	Change Notices	Issued to: Acknowledged
Production Orders	Change Notices	Issued to: Acknowledged
Production Orders	Change Notices	Issued to: Acknowledged
Production Orders		
Production Orders		Issued to: poknowledged

This Reproduction Order Change is a mimeographed form.

	P. D.	SEC.D	D. M.			P. D.	MEC D	D.M.			P 0	RECO	Q. M.	
ATE	P. T.	TOTAL	ISSUED	BAL.	DATE	p. T.	TOTAL	(SSUED	BAL	DATE	p. r.	TOTAL	ISSUED	BAL
744	13.4													
/10	A.69	Jana		1000										
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110	A:600	6000		6000	-		-			-				
1/5	14.6	_		5000			-			1				
-	30695	5000	Page 16		$\vdash$		-			1		-	-	
1/16			7/15		1		-				-			
11	1309	4000		4000										
107	/	10,000		14000				1						-
,1	1456 30700	Some		5000										
18	30700	10.000		19000										
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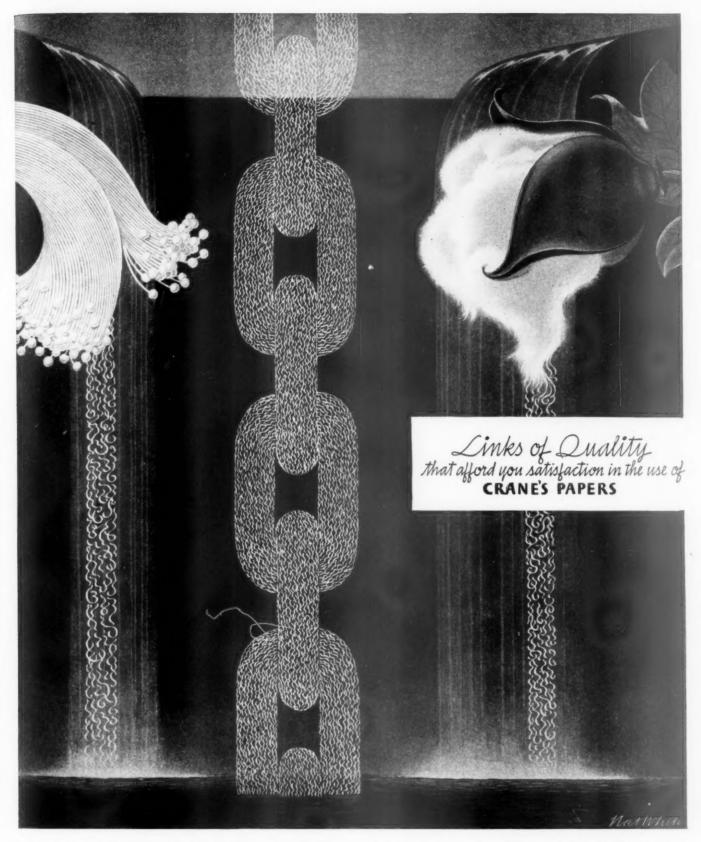
The inventory control is comparatively simple.

The entries on the above exhibit evidence its use.

(Continued on page 278)

The for son The be tha

C



The satisfaction that you enjoy in using Crane's Fine Papers for business, personal, and social purposes stems from reasons that are readily apparent; others that are intangible. The texture, the clarity, the quality of the sheet you use—be it Crane's Bond or Crane's Kid Finish—is something that you can see and feel and fully appreciate.

But the inherent quality that gives Crane's these distinctive

characteristics comes from the materials from which it is made—cotton and linen fibres only and crystal-clear water—and the accumulated skill and experience of making fine papers for 145 years.

These links with the ancient craft — this use of these timetested materials — give you papers made in the traditional spirit and the modern manner — make Crane's watermark your guide to excellence in the purchase of paper.

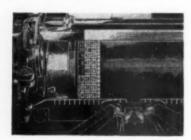
CRANE'S FINE PAPERS . MADE' IN DALTON, MASSACHUSETTS . SINCE 1801

# VISIBLE RECORD CARDS SAMPLES AVAILABLE

Ross-Gould Co., 309 No. 10th St., St. Louis, Mo., will send you printed matter and samples of Handifax Visible Record Cards. Sheets can be easily and quickly assembled into sheets of cards for use in binders or ordinary correspondence folders. The cards are available in 6x4, 8x4, and 10x4 sizes for general utility, ruled on one side and blank on the other side which can be used for imprinting special rulings or headings by multigraph, office ditto, mimeograph or press. When cards are assembled into sheets, visible margin on each card is ½" wide.

# 7 7 7 TYPEWRITER ATTACHMENT INDICATES SHEET END

Typewriter attachment known as the "Typulator", which indicates to the typist the amount of space or lineage remaining toward end of sheet, is an-



Indicates amount of space or lineage toward end of sheet

nounced by the Typulator Sales Co., Dayton 1, Ohio. The indicator is attached to the platen. A red warning band automatically warns the typist of the approach to the bottom of the sheet. The device is said to help prevent incorrect centering, too low typing, uneven bottom margins, crooked lines and crowded signature space.

# 7 7 7 TRAVELING EXHIBIT OF SELF-SEALING TAPES

Self-sealing tapes in almost endless variety—as to type, material, color and tensile strength—are now being exhibited throughout the country by International Plastic Corporation of Morristown, N. J.

Two complete traveling exhibits are on the road. Showings are held at leading hotels—for two to four days each time. The exhibits feature major improvements on the established lines and radical new developments—particularly in self-sealing metal and paper tapes.

MINNESOTA

MISSOURI

Duluth..... Minneapolis... St. Paul....

The "Filmonize" line—for industrial and commercial uses—includes cellophane, cellophane fibre, acetate, acetate fibre, metal, paper, riveting, identifying, splicing, packaging, mending, masking, colored, multi-colored, printed, numerical and decorative tapes.

The new "Taypit" line—for office and home uses—includes crystal-clear transparent tapes, colored and multi-colored tapes, and decorative tapes for gift wrapping.

# Levelcoat \*

# **PRINTING PAPERS**



### Distributed by

MONTANA

ALABAMA Birmingham	MONTANA Billings
ARIZONA PhoenixZellerbach Paper Company	Butte Great Falls
	NEBRASKA
ARKANSAS Little Rock Arkansas Paper Company	Lincoln Carpenter Paper Company
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Eureka Zellerbach Paper Company	NEVADA
Fresno	RenoZellerbach Paper Company
Los Angeles " " "	NEW JERSEY
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Redding	NEW MEXICO
Sacramento " " "	
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Jacksonville. Knight Brothers Paper Company	NORTH CAROLINA
Minori " " " "	
Orlando " " "	Charlotte Dillard Paper Company Greensboro
Tallahassee " Tampa	NORTH DAKOTA
	Fargo Western Newspaper Union
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AtlantaSloan Paper Company	Cincinnati The Chatfield Paper Corp.
IDAHO	Cincinnati The Chatfield Paper Corp. Cleveland The Petrequin Paper Company
Boise Zellerbach Paper Company	ColumbusThe Scioto Paper Company ToledoThe Ohio & Michigan Paper Co.
ILLINOIS	OKLAHOMA
Chicago Berkshire Papers, Inc.	Oklahoma City Carpenter Paper Company
Chicago Berkshire Papers, Inc. Chicago Chicago Paper Company Chicago Midland Paper Company	Tulsa Tayloe Paper Company of Oklahoma
Chicago Midland Paper Company Springfield Capital City Paper Company	OREGON
Springfield Capital City Paper Company	Eugene Zellerbach Paper Company
INDIANA	Portland
Indianapolis Crescent Paper Company	PENNSYLVANIA
IOWA	Philadelphia Paper Merchants, Inc.
Des MoinesCarpenter Paper Company	Philadelphia D. L. Ward Company Pittsburgh The Chatfield & Woods Co. of Pa.
Sioux City	
KANSAS	RHODE ISLAND
TopekaCarpenter Paper Company	ProvidenceCarter, Rice & Company Corp.
Wichita Western Newspaper Union	Greenville
KENTUCKY	TENNESSEE
Louisville The Chatfield Paper Corp.	ChattanoogaBond-Sanders Paper Co.
LOUISIANA	Jackson
Baton Rouge Louisiana Paper Co., Ltd.	KnoxvilleSouthern Paper Company
New Orleans The D and W Paper Co.	Memphis Tayloe Paper Company
ShreveportLouisiana Paper Co., Ltd.	Nashvillebond-Sanders Paper Co.
	TEXAS
MARYLAND	Austin
Baltimore Baltimore Paper Company, Inc.	Dallas " " "
MASSACHUSETTS	
	Houston I S Roewerth Co. Inc.
Boston Carter, Rice & Company Corp. Worcester Charles A. Esty Paper Company	Harlingen L. S. Bosworth Co. Inc. Lubbock Carpenter Paper Company
	San Antonio
MICHIGAN	UTAH
Detroit	
Grand RapidsCarpenter Paper Company	Salt Lake CityZellerbach Paper Company
AAAAAAAAAAAA	VIRGINIA

EXPORT AGENTS: American Paper Exports Inc., New York, U. S. A. Cable Address: APEXINC — New York

.......

.... John Boshart Paper Company Carpenter Paper Co.

VIRGINIA

WISCONSIN

WASHINGTON

Richmond ........Cauthorne Paper Company

Milwaukee ...... The Bouer Paper Company

....Zellerbach Paper Company

# KIMBERLY-CLARK CORPORATION

Neenah, Wisconsin

122 E. 42nd St., New York 17 • 8 S. Michigan Ave., Chicago 3 • 155 Sansome St., San Francisco 4

1 de etch etch valu

2 nes

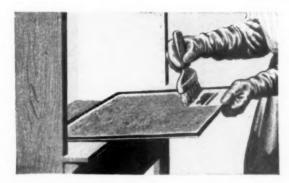
Lev whi



This advertisement is one of a series appearing in four colors in Fortune, Nation's Business, United States News, Newsweek and Business Week.

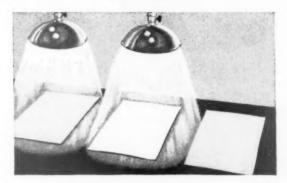
# Test your word knowledge

of Paper and Printing



### 1. Dragon's Blood

- Shade of red ink
- Over-dramatic copy
- Resinous powder used in etching



### 2. Brightness

- Reflectivity of paper for yellow light
- Degree of whiteness
- Color tints in paper



### 3. Broadside

- ☐ Large advertisement in folder form
- ☐ Single sheet, printed one side
- ☐ Single sheet, printed both sides



### 4. Trufect

- An etching process
- ☐ A type of matrix
- ☐ An ultra-quality printing paper

### ANSWERS

- 1 Dragon's Blood, a resinous powder, protects certain areas of an etched plate while others are being etched more deeply. The subtlest values of beautiful engravings show to perfection when run on Levelcoat, considered by fine printers throughout the country to be unsurpassed in paper.
- **2** Brightness in paper is measured by its degree of whiteness. Brightness is a well-known characteristic of Levelcoat Printing Papers, a factor which gives halftones the contrast and vitality of life-like reproduction.
- **3 Broadside**, though often regarded as any type of mailer, is technically a large folder which, when opened, forms one large advertisement. Lustrous Levelcoat, printed on one or both sides, makes every sheet a perfect background for color or for text.
- 4 Trufect is an ultra-quality Kimberly-Clark Printing Paper, the perfected result of research and 74 years of practical paper-making experience. So rich, so smooth, so clear and bright, TRUFECT provides precisely the luxurious background which helps good printing sell.



For black and white or color letterpress printing in publications, mail order catalogs, house organs and direct mail, select one of these Levelcoat grades— Trufect, Multifect or Hyfect, Kimberly Clark Corporation, Neenah, Wis. A PRODUCT OF
Kimberly
Clark
RESEARCH

TRADE MARK

APRI



A dispenser for pressure sensitive tape that can be preset to feed measure! strips has been introduced by Better Packages, Inc., Shelton, Conn., manufacturers of gummed sealing tape machines.

This new style package sealer for tacky tapes is being made available, for the present, in two basic models. "Big Inch", the larger of the two, takes standard 2592" rolls of cellulose or paper tape on 3" core. It can be preset to dispense the following lengths: 34", 1" 11/4" and 11/2" "Little Inch," smaller but similar in design, takes standard 1296" rolls on a 1" core, and can be preset to dispense stript 3/4", 1", and 11/4". A flexible steel spool allows for the slight variations in core sizes of the different makes

As pressure sensitive cellulose tapes are generally used in shorter lengths,



Tape may be dispensed with one hand

Big and Little Inch have been designed to overcome the many problems involved in handling and applying these short strips of tacky tape. The measuring device makes possible worthwile economies in the amount of tape used.

The machines have a vertical pick-up, and their weight is great enough to keep them firmly in position without moving or sliding during operation. These take the least counter space of any such dispenser. Tape is dispensed with one hand, leaving the other free to hold the package.

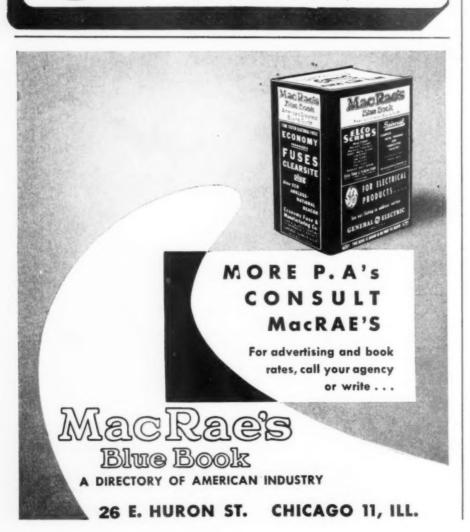
### DUPLICATOR WITH HAIRLINE REGISTRATION

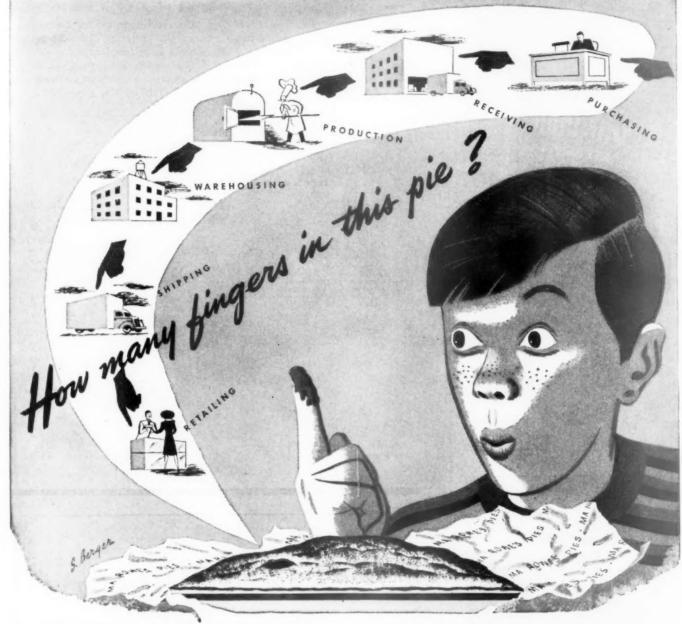
Hairline registration is said to be obtained with registration control mechanism on Niagara duplicator, which simplifies the making of ruled office forms, and color work. The duplicator, which is made by the Niagara Duplicator Co., 128 Main St., San Francisco, Calif., is claimed to have production rate of 250 copies per minute. Automatic feeding permits use of rough or smooth, light or heavy paper, in sizes from 2½" to 16". Printed matter and samples of two-color work available.



When you want to KNOW...go to an expert!

Ask your printer...he KNOWS paper! Rising Paper Company, Housatonic, Mass.





Many more than you're likely to guess. For today's mass production—whether it's pies or pipes you make—calls for literally hundreds of busy fingers "in the pie."

In any business, a myriad of instructions must be given and received—purchasing—inspection—receiving—receipts—material control—disbursement—these and many other orders must be acted upon to determine what kind, when and how many products go to the market. This is the routine so vital to business—the routine that depends upon forms.

Use your own business for an example. Do you have too many or too few forms? Could several

be combined into one? What about costs, and could they be lowered? These are questions Uarco can answer and save you money while seeing that routine operations give you complete, accurate control over work from planning to final selling.

Designing more efficient forms for individual businesses is Uarco's job. Call an experienced Uarco representative today—no matter what business you're in, he'll gladly study your particular problems without cost and suggest methods of improving your present forms and routine system. Or write for additional information. UARCO INCORPORATED, Chicago, Cleveland, Oakland. Offices in All Principal Cities.









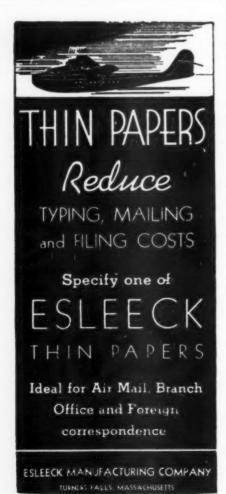




CONTINUOUS-STRIP FORMS FOR HANDWRITTEN TYPEWRITTEN BUSINESS MACHINE RECORDS

APRI

OLD TOWN makes carbon rolls makes duplicating rolls OLD TOW OLD TOWN makes pure silk ribbons paper OLI ons OLI mal OLD T OLD LD TOV make CARBONS OLD T LD TOW and DUPLICATING SUPPLIES OLD makes OLD TOY WOT makes LD OLD TOWN For those who prefer OL OLD TOWN makes curlproof carbon makes carbon ribbons OLD TOWN ma MINTOWN RIBBON & CARBON CO. INC. BROOKLYN 17, NEW YORK



(Continued from page 272)

copies. The original or white copy is sent to the vendor; the pink copy is filed numerically; the yellow copy is held in a pending-file, alphabetically, and used for expediting delivery; and the green or fourth copy is sent to the receiving department for use when the material is

shortages are noted on this sheet, and orders are placed for them accordingly.

"Our inventory control card is comparatively simple. The accompanying example is self-explanatory. This card enables us to keep track of receipts against several orders at the same time, make deductions for production orders

General TELEVISION and RADIO CO 2701-17 LEHMANN COURT - CHICAGO 14, ILLINGIS - TELEPHONE DIVI	Purchase Order No.  Change No.  DRP.
Actual Size $\mathbb{S}_n^{A^m} \times 11^m$ lease change the above Purchase Order in the following particula ubject to the conditions governing the original order.	rs.
CHARGE DUANTITY DUR PART NUMBER DES	SERIPTION CHANGE PRICE
Please sign and return the attached acknowledgment immediately.	General Grant RADIO CORE

PECIFICATIONS					Secret						IT 15174
	PURCHAS	E RECORD								THE RESERVE AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO IN COLUMN TO THE PERSON NAMED IN COLUM	
ABC Co.			ACORESS		PHONE	v6'vDOR				AUGRESS	PHONE
e digita	REQUISITION NO.	ORDER NO.	yen;	QUANTITY	L167	DISCOUNT	NET	UNIT	FOR	TERMS	REMARKS
N-10	-	1309	1	35,000		-	22.00	M			
								_Vd			
		-									
									-		
			1 1								

Purchase Record Form

received. The yellow copy is also used for recording notations as material is received, and filed in a permanent file, alphabetically, when completed.

"Requisitions for production material are not used, but production orders are issued which in effect are parts sheets with an indicated quantity of so many units. Parts are laid out on trucks and and the return of defective material, and keep a running total inventory. The entries on the exhibit-card evidence its use (See page)

"Our purchase change-order is typed in five copies, one of which is signed by the vendor and returned as an acknowledgment.

(Continued on page 280)





PLASTIC TEN INCH SLIDE RULE 1452 PL

\$850

Price Includes
LEATHER CASE
and
Instruction Book

Out of the plastic world arrives the full development of fine precision and smooth operation. Plas-Ten, the warp resistent plastic ten-inch slide rule with fully metal bound indicator is destined to become the slide rule of slide rules.

A COMPLETE LINE OF DRAFTING AND REPRODUCTION MATERIALS

THE FREDERICK POST CO.
3650 N. AVONDALE AVE . CHICAGO 18, ILL.

DETROIT

CHICAGO

MILWAUKEE LOS ANGELES

NATION WIDE NETWORK OF POST DEALERS



# First Postwar National Convention

N. A. P. A.

May 27-28-29

# Stevens Hotel CHICAGO

31st Annual Convention and

Inform-A-Show

Registrations and Hotel reservations will clear through National office.

Official forms must be used. Apply to your local secretary for combination form. (Continued from page 278)

"In addition to this we use a production change order, whereby a part is changed, added or eliminated, after the production order has been issued. This is originated either by the production department or the engineering department, is approved by a general manager, and copies are issued to the engineering, production, and purchasing departments and the stockroom. The original is filed in the purchasing department by change order number."

### 1 1 1 LETTERHEADS WITH INDIVIDUAL WATERMARKS

Samples of distinctive business stationery used by nationally known companies—stationery with company trade-marks watermarked on each sheet, accompany folder available from the Fox River Paper Corporation, Appleton, Wisconsin. The combination of white, crisp 100% cotton fibre paper and the individual watermark, creates an unusually attractive letterhead.

### 7 1 1 NATIONAL BLANK BOOK ELECTS NEW OFFICERS

Joseph M. Towne was elected president of the National Blank Book Company, Holyoke, Mass., at recent directors'



Joseph M. Towne, President

meeting, succeeding his brother, Edward S. Towne who had held the office since 1917, and who resigned because of ill



Edward S. Towne, Vice-president

health. The new president had been vice president in charge of manufacturing operations, since 1917. Edward S. Towne was elected vice president. Treasurer Frank B. Towne, with the remarkAPRIL

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A. B.

P. T

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Bei peopli chairs in a the Even at a

The word early The estal in go

press mon The adju

In executed desk Inst than executed desi

office beg the all Off

son lec rar bec able record of 58 consecutive years in that office, also tendered his resignation, and his son, assistant-treasurer Richard



A. B. Hughes, Ass't Treas.; R. P. Towne, Treas.

P. Towne was elected treasurer. Controller Alton B. Hughes is the new assistant treasurer.

### A FEW NOTES ON DESKS

Before chairs were in general use people sat on benches and stools. When chairs were introduced a person sitting in a chair occupied a seat of honor, says the Wood Office Furniture Institute. Even today a man who "holds the chair" at a meeting is its presiding official.

The word "desk" comes from the Latin word, "desca", meaning table. Many early desks had only one or two drawers. The present type office desk with a pedestal of drawers on either side has been in general use for less than a century.

Before the invention of the printing press books were hand-lettered, chiefly by monks working on a special type of desk. The height of these desks often was adjustable.

The average office worker needs 60 to 75 square feet of floor space for most effective work.

In many offices the importance of an executive is indicated by the size of his desk, says the Wood Office Furniture Institute. If he has one that is longer than five feet he becomes a "66 inch executive." Quality of wood, as well as design, also is indicative of executive importance.

# DESKS WITH RUNNERS INSTEAD OF LEGS

Up until about half a century ago most office desks were legless. The drawers began several inches from the floor, and the space underneath was boarded up on all sides with panels, says the Wood Office Furniture Institute.

After a desk remained in position for some time a goodly layer of dust collected in under the drawers. The arrangement also annoyed cleaning women because their mops and waxers marred the finish on the panels. To overcome these conditions the desks were given

(Continued on page 282)



# EAGLE A AGAWAM BOND

acclaimed him as preeminently "The Mas-

ter" by his contemporaries.

with its famous Eagle-A watermark—combines 100% new cotton fibre with outstanding paper-making skill to produce a quality paper of a texture and composition that has won acclaim and leadership with buyers of paper for business and legal use.

Quality in business stationery is an asset—it impresses your customer, client or prospect—builds prestige and goodwill and acts as your silent salesman at all times.

Ask your printer, lithographer or engraver for Eagle-A Agawam Bond business stationery.

Ask your stationer for EAGLE-A AGAWAM BOND BOXED TYPEWRITER PAPER

# EAGLE-A PAPERS AMERICAN WRITING PAPER CORPORATION - HOLYOKE MASSACHUSETTS



SEND FOR THIS NEW SAMPLE BOOK...

Before you specify paper for your next letterhead or other business printing, examine Hammermill Bond's new glare-free white. Compare it with others. Just mail the coupon for the new sample book.

WATERMARK ... IT IS HAMMERMILL'S WORD OF HONOR TO THE PUBLIC BOND

Companion papers for office use include Hammermill Mineo-Bond and Hammermill Duplicator

Hammermill Paper Company, 1461 East Lake Road, Erie, Pennsylvania Please send me—free—the sample book of new Hammermill Bond.

Name

Position

(Please attach to, or write on, your business letterhead)

PU-AP

This new white is not a postwar

development. Laboratory research

never stopped during the war

years. When restrictions were

eased, our technicians were ready

with a new, more brilliant "shade

of white" and 14 attractive colors.

(Continued from page 281)

legs and in this form have long been known as "sanitary desks."

Now the desks are going to lose their legs again because the legs interfere with the foot movement of office workers. The desks aren't going to revert to the old type, but will have a single runner several inches high, on either side. This will let the cleaning women do their work, with ample space for brooms and mops, and at the same time permit the office worker to move from side to side without bumping his corns on the desk's legs. Substitution of runners for legs also will improve the appearance of desks.

### A. C. BARIONI RETURNS TO REMTICO SUPPLIES DIVISION AS GENERAL SALES MANAGER

Major A. C. (Al) Barioni, AAF, is the new general sales manager of the Remtico Supplies and Line-a-Time Division of Remington Rand Inc., Bridgeport, Conn., it has been announced by I. Lee Miller, general manager of the Division.

Major Barioni's association with the Remtico Supplies Division in Bridgeport,



A. C. Barioni

Conn., began in 1928 when he joined the sales force. Duty overseas with the Army Air Forces was followed by important administrative duties at Army Air Forces Headquarters in Washington. He was given his new assignment upon his return to civilian life.

As general sales manager, Major Barioni will direct Remtico Supplies Division's sales program for typewriter and office machine inked ribbons, carbon paper products, and Line-a-Time copyholders.

# REYNOLDS PEN CO. ANNOUNCES CANADIAN PLANT

The Reynolds International Pen Co., of Chicago, makers of ball-point pens, announces that it has opened a Canadian manufacturing branch in Oshawa, Ontario, near Toronto. George D. Clarke, former RCAF wing commander, is president of Reynolds International Pen Co. of Canada Ltd.

Chicago production facilities which required only seven employees last Oct-

APRIL

ober not than 3 distribution The production

George

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Curl paper Volger are on

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not tape ober now utilize the services of more than 3,000 people in the production and distribution of 30,000 pens daily.

The first pen off the new Canadian production line was presented to Premier George A. Drew of Ontario Province.

# CURL-LESS QUICK REMOVAL CARBON PAPER

Curl-less, Quick Removal carbon paper has been developed by Mittag & Volger, Inc., Park Ridge, N. J. Sheets are one-half inch longer than customary



letter, legal or manuscript sizes, the upper left and lower right corners being clipped. Extraction is simple, fast and clean, the half-inch extension enabling operator to pull carbon sheets free without creases or wrinkles.

### CARE OF PAPER BAGS

New booklet on the care of paper bags entitled "Important Facts for the Man in Charge of Paper Bag Storage", has been published by Bemis Bro. Bag Co., 408 Pine St., St. Louis, Mo. It contains data regarding the proper methods to follow in caring for paper bags in storage, and how to restore moisture to paper bags after they have dried out.

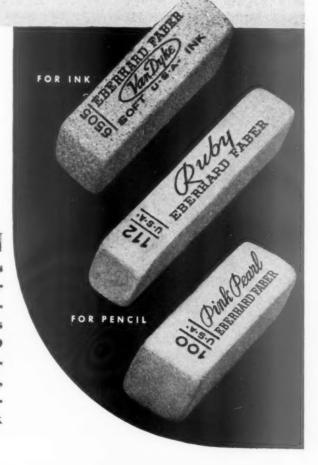
# f f f STIKFAST TAPE TONIC

The Diagraph-Bradley Stencil Machine Corporation of St. Louis, announces a new product known as StikFast Tape Tonic.

StikFast Tape Tonic is a fluid to be used in the water of all tape machines. It is mixed with water in the proportion of 1 part StikFast Tape Tonic to 7 parts water. The resultant mixture is a white, translucent appearing fluid which makes the gummed tape soft and pliable, makes it grab the carton faster and makes the tape adhere quickly. It is said to vastly improve the adhesion of the tape in extreme temperatures — will not freeze; also, it helps to prevent the tape from peeling, buckling, and generally speeds all taping operations.



# EBERHARD FABER ERASERS for Clean Corrections



# SATISFACTION

always comes with the finer quality established in crasers by EBERHARD FABER. Available in all styles, for every crasing purpose. Ask your Dealer.

APRIL,



# We're filling our back log of orders FIRST!

All during the priority years, orders for BOSTON Pencil Sharpeners came in every day, and we filled only priority orders in accordance with regulations. Now we are making every effort to whittle down that tremendous pile of orders.

It will be a long time until you can get all the BOSTON sharpeners you want, but everyone will get their fair share of whatever is available.



Thanks for your patience. A BOSTON is really worth waiting for.

# BOSTON PENCIL SHARPENERS

C. HOWARD HUNT PEN COMPANY

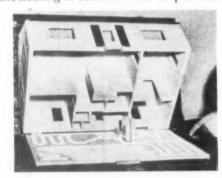
SPEEDBALL PENS

HUNT PENS

# INDUSTRIAL PLANTS NT heating, which some architects and

R ADIANT heating, which some architects and engineers affirm will be one of the three or four revolutionary new ideas to be accepted generally by the building industry has achieved nearly a thousand installations in this country, according to L. F. Rains, president of A. M. Byers Company, Pittsburgh.

Radiant heating is considered to be particularly appli-



Display unit used to demonstrate installation of tubing for radiant heating in floor of home. Hot water is circulated through the coils.

cable to industrial and commercial structures, with special interest being demonstrated by architects and engineers concerned with factory, hospital, school, church, airport and public building construction, Mr. Rains states.

The company is equipping its staff of field engineers with miniature displays like that illustrated. The display, hinged at the back, can be raised to reveal transparent flooring in which is embedded illuminated tubing. This tubing stimulates the wrought iron pipe coils through which, in actual installations, hot water is circu-



This view shows installation of hot water heating coils in floor of factory office building. Fuel economy is said to range up to thirty percent.

lated to convert the entire floor into a heat radiating surface.

The second illustration shows radiant heating pipe layout or floor coils being installed in factory office building. Instead of using radiators or registers the heating system consists of a series of wrought iron pipe coils through which hot water from the boiler is circulated. The coils are covered with a concrete slab, which serves as floor as well as heating medium. Advantages of the system are said to be greater comfort, improved cleanliness, ability to use all floor and wall space, and fuel economy ranging to 30 percent.

FREE — NEW TRADE LITERATURE CHECK THE COUPONS ON THE "KNOW HOW" PAGES 10 — 12 — 14 — 16

# "Just the paper I've been looking for, Boss"



"Exactly the paper for me!" That's the way many a printing shop foreman feels about the new ADIRONDACK BOND.

This watermarked 100% sulphite bond enables him to turn out A-1 jobs when the call is for letterheads, billheads, statements and other office forms. Besides taking letter press and offset-lithography printing exceptionally well, it offers an ideal surface for typing or longhand—pleasing the customer on every count.

The new ADIRONDACK BOND and its

teammate ADIRONDACK LEDGER, are not yet plentiful enough to supply all who want these outstanding papers. As the world's largest maker of papers, we're doing everything we can to expand available quantities. International Paper Company, 220 East 42nd Street, New York 17, N. Y.



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# PERSONALITIES in the NEWS

Arthur E. DesNoyers has been named Director of Procurement for Aireon Manufacturing Corporation, Kansas City, Kansas. Russell J. Cole continues as Chief Purchasing Agent. Mr. Desnoyers, a



major in the Air Forces and attached to General Arnold's staff, worked on the procurement, planning and control of radar and radio equipment peculiar to the Army Air Forces. He was released from active duty last January. As Field Project Officer, his responsibility was to see that all critical radar equipment requirements were met by the several electronics manufacturers, working with prime and sub contractors in the procurement and expediting of raw materials and components. Prior to joining the Army in April 1942, Mr. DesNoyers was an accountant-examiner in the Broadcast Division of the Federal Communications Commission, joining the FCC in 1935.

Harry R. Russell, formerly Purchasing Agent for the Wolf Detroit Envelope Company, has been named Assistant Vice President of the company. No one has yet been appointed to succeed him as Purchasing Agent.

Major John Gray Commins has joined the Teletone Radio Corporation, New York,



N. Y., as Purchasing Director. Major Commins served as director of procurement and production of radio and radar equipment for the Army Signal Corps during the war.

S. Alfred Richards has been named Purchasing Agent for the Railley Corp., Cleveland, Ohio, makers of pin-up and other type lamps, shades, etc.

Thomas D. Hudson has been named Assistant District Purchasing Agent for the American Steel & Wire Co., Cleveland, Ohio. Other changes in the Purchasing Department are as follows: Roger W. Berrett has been named Assistant Purchasing Agent and T. M. Haddock has been named district Purchasing Agent, Cleveland, succeeding Robert T. Buckley. Frank D. Evans has been named Chicago District Purchasing Agent.

R. E. Settle has been appointed Manager of Purchasing and Material Control for Allison Division of General Motors, Indianapolis, Ind. He has been acting manager of the department since



September 1944. He announces the appointment of Joseph W. Payne and Frank J. Giorgianni as assistants, the former in charge of aircraft material, and the latter of commercial material. Both men are veterans in the department. Mr. Settle, who is a graduate of Indiana Central College, joined Delco-Remy Division at Anderson, Ind., in 1926, and was transferred to the Delco-Remy Muncie plant in 1928. He was production supervisor when he joined the Allison organization in 1940.

William A. Owen, Assistant Purchasing Agent, has been named Purchasing Agent for the Cleveland Pneumatic Tool Co., and the Cleveland Pneumatic Aerol Inc., Cleveland, Ohio, succeeding Wilfred C. Wehnes who has been made vice president of Oliver & Co., Cleveland Heights. Mr. Wehnes has been with Cleveland Pneumatic Tool Company for 11 years, starting in 1935 in the shop. Oliver & Co., with offices at 2460 Fairmount Boulevard, will represent the Camden Forge Co., the Kanney Cylinder Co., and the Detroit Keelering Co.

Roger W. Botchelder has been appointed General Purchasing Agent of American Brake Shoe Company, New York, N. Y., replacing William T. Kelly, Jr., now president of the company's Kellogg Di-



vision. Mr. Batchelder, who was in the Army Air Force during the past five years with the rank of colonel at the time of his discharge, has been with Brake Shoe since 1933.

Horold A. Berry of Fort Wayne, Ind has been named Director of Purchase for the Cleaver-Brooks Company, 32 East Keefe Ave., Milwaukee, Wis. M Berry has been quite active in the affairs of the Purchasing Agents of Fort Wayne, having served as secretary-treasurer, president and national director, as well as on various committees of the N.A. P.A. He also has been active in civic affairs in Fort Wayne, having served as officer, director or committeeman on various civic and professional organization groups, as well as the O.P.A. and Veterans' Aid Commission.

More Bloch has been appointed Purchasing Agent for National Dairy Products, New York, N. Y., succeeding the late Edward R. Scott. Mr. Bloch has been



associated with National Dairy since 1924 and for the past several years has been an assistant in the purchasing department.

(Continued on page 288)



A "must"
where Corrosion
is a factor

"Not just durable ... but, truly STAINLESS"

The metallurgical properties of stainless steel which make it, more than any other metal, rust-proof, stain-proof, acid resisting and heat resisting are now incorporated in a full line of *Pittsburgh Stainless Steel Nails*.

Naturally, nails of stainless steel cost somewhat more per pound . . . due largely to the greater cost of the steel But the increased cost is insignificant when measured in terms of greater strength, longer life, increased effectiveness, and special advantages gained where non-corrosive, non-staining, non-contaminating requirements are involved. Thus, in any application where the use of stainless steel in other forms is indicated, stainless steel nails are equally essential if nailed construction is involved.

Exactly the right size and style of nail has always been important to good construction. Today exactly the right kind of steel is equally so. Tell us your requirements or write for complete Pittsburgh Stainless Steel Nail booklet No. 491.

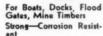
# PITTSBURGH STEEL COMPANY

1649 GRANT BUILDING . PITTSBURGH 30, PA

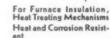


For Dyeing Vats, Tanning Bins, Pickling Tanks, Acid Baths, Chemical Processing Vats

Corrosion Resistant, Non-

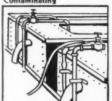


For Silos, Water Tanks, Feeding Troughs Non-Rusting—Durable



For Roofing & Siding Rustless Gutters Permanent—Stainless

For Cooling Towers, Water Aerators Durable—Corrosion Re-













PITTSBURGH STAINLESS STEEL BAR, WIRE AND TUBULAR PRODUCTS

# What type of STAINLESS FASTENER do you need?



# Prompt delivery from the largest stock in the nation!

Screws...nuts...washers...
pins...Allmetal carries the largest
stock in the country of stainless
steel fasteners and screw machine
parts. We also have facilities for
heading, tapping, drilling, reaming, slotting, turning, stamping,
broaching and centerless grinding
... and we work not only with
stainless and monel, but also with
duralumin, aluminum, brass,
bronze, or any other non-corrosive
metal. All parts produced to close
tolerances. Write for our catalog
today. Allmetal Screw Products
Co., 33 Greene St., New York.

# Send for FREE CATALOG



This new, 83-page catalog helps you select the cotrect size and type of non-corrosive fastening device for any particular job. Includes stock sizes, specials that can be made, engineering data, etc. Make request on company letterhead.

### ALLMETAL SCREW PRODUCTS CO. 33 Greene Street, New York 13

SPECIALISTS in STAINLESS FASTENERS (Continued from page 286)

Robert I. Olsen is now Assistant Purchasing Agent for Frederic B. Stevens, Inc., Detroit, Mich. He formerly was purchasing agent for the Westfield Manufacturing Co.

Philip M. Schloss has succeeded Charles W. Steehler as Assistant Purchasing Agent at the Electric Vacuum Division of the General Electric Co., Cleveland, Ohio. H. M. Richman is Purchasing Agent.

Arnold O. Anderson has been made Assistant Purchasing Agent, district purchasing department, Aluminum Company of America, Cleveland, Ohio. He formerly was senior buyer at the Pittsburgh office. Frank Meket is district Purchasing Agent.

K. M. Bosonko, Purchasing Agent, Penn Greyhound Lines, Inc., Cleveland, Ohio, announces that his office will be moved to Chester Avenue & Walnut Street where modern terminal is to be developed by Greyhound.

Rupert Gariepy has been appointed Purchasing Agent at the American Greeting Card Co., Cleveland, Ohio.

Carl Poble has been appointed Supervisor of Materials and Controls, including Purchasing, for Uraco, formerly United Autographic Register Company, Cleveland, Ohio. He has been foreman of the shipping, packing and stock departments for the past 15 years.

R. B. Sloy has resumed his position as Purchasing Agent of the Talco Asphalt & Refining Co., Mt. Pleasant, Tex., following almost three years of Army service.

John E. Brodshow has been named Purchasing Agent for the Southwestern Drug Co., with headquarters in Dallas, Tex. Previously he was sundries buyer for the company.

Edward J. Sweeney succeeds Richard Simpson as Purchasing Agent of the Boston Works of the Loose-Wiles Biscuit Company, who has retired after 39 years' service. Mr. Sweeney was traffic manager for many years.

Frank E. Colesworth, Purchasing Agent of Crompton & Knowles Loom Works, has been elected president of the Board of Trustees of City Hospital, Worcester, Mass.

Howard M. Van Cleaf has been elected Vice President in Charge of Purchasing of the Whitman Export and Import Corporation, New York, N. Y.

Worle Royal Motson is new Purchasing Agent at Western Fiberglas Supply, Ltd., San Francisco, Calif. He previously was a buyer for Golden State, Ltd., and purchasing agent and personnel director for Bancroft Whitney.

Mortin A. Blinn has been named District Purchasing Agent, American Steel & Wire Company, Worcester, Mass., succeeding Duncan C. Macdonald, retired, who has been continuously in the company's service for 52 years, having started as office boy and clerk with a predecessor company in 1893.

M. R. Denison has been promoted to Director of Purchases, Bendix Home Appliances, Inc., South Bend, Indiana. Henry A. Jewell was named to succeed him as Purchasing Agent, and L. F. Kedzie has been appointed Assistant Pur-



M. R. Denison

chasing Agent. Mr. Denison recently joined Bendix after 32 years' experience in production and purchasing for automotive manufacturers. Mr. Jewell formerly operated the Jewell Sales Agency at Muskegon, Mich. His experience includes six years at Timken Detroit Axle Co.,





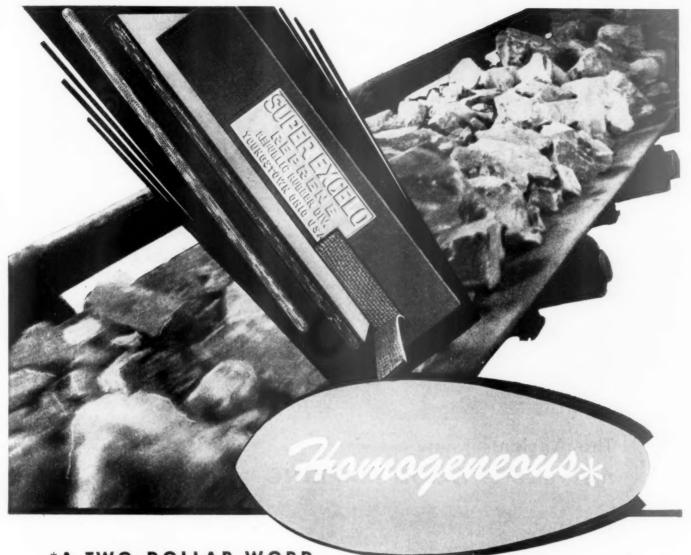
H A lewell

L. F. Kedzie

as time and cost material control and tool supervisor; three years at Kelvinator Corp., Detroit, in material control and purchasing; three years with Detroit Gear & Machine Division as buyer; production manager for Norge Division, and Purchasing Agent for Norge Machine Production Division. Mr. Kedzie spent 10 years in the sales division of the Dahlstrom Metallic Door Co., Jamestown, N. Y., previously being assistant purchasing agent for the Packard Motor Co., Detroit, Mich.

Wm. R. Orth is Director of Purchases of division of purchases recently established by the Binshed-Mason Co., Detroit, Mich. He is a member of the board of directors of the Purchasing Agents Association of Detroit, and is treasurer of the Detroit Paint, Varnish, and Lacquer Association. For a number of years he has taken an active part in promoting the paint industry.

(Continued on page 290)



that's worth a lot more to users of Republic Conveyor Belting

To take buffeting impact, constant flexing, other service stresses without breaking down, a conveyor belt carcass has to be a uniform, virtually inseparable combination of reinforcing materials and rubber compounds. Republic belt-building experts use the word homogeneous to describe the structure of such carcasses—

and to their skilled hands and eyes goes the credit for making sure this is accomplished in each Republic Conveyor Belt. This is one of the reasons Republic Conveyor Belts have set records for longer, more troublefree service in hundreds of industries from coast to coast. Consult your nearby Republic Distributor.



APRI



# The Ancients Knew the Value of GOOD MARKING

History records our ancestors' appreciation of the value of individual marking to establish the authenticity of all personal and business transactions. The mark of a signet ring impressed in sealing wax was usually employed for protection of their good name against fraudulent use on letters and papers.

Trade Marks have been used by business houses for similar purposes for many years. To the consumer they are a recognized guarantee of the quality of the product and the integrity of the maker. For nearly a century Jas. H. Matthews & Co. has specialized in the design and manufacture of marking devices. If you have a marking problem, we will be glad to help find a solution. Any product worth marking is worth marking well.



(Continued from page 288)

D. V. Motthews has been made Purchasing Agent of the Lone Star Cement Corp., Dallas, Tex., succeeding L. E. Arnold who has been transferred to the auditing department. Mr. Matthews has been with the company for 21 years.

Clem C. Speer is now Purchasing Agent for the Shamrock Oil & Gas Cororation, Amarillo, Tex., succeeding J. R. Booned who recently resigned to go into business for himself. Since July, 1943, Mr. Speer has been Assistant Purchasing Agent, and previously was in the Accounting Department.

Clifford R. Hale has been appointed General Manager of Purchasing and Traffic for the Rheem Manufacturing Co., manufacturers of household appliances and steel shipping containers, with offices in the New York offices of the Company.



Mr. Hale formerly was vice president of Continental Industries, Inc., New York, and previously served for two years in the Army with the rank of lieutenant colonel assigned to the New York Chemical Warfare Procurement District. Prior to entering the service he had been with Air Reduction Sales Company and U. S. Industrial Chemicals, Inc., New York, for 17 years where he was General Purchasing Agent. He graduated with a Bachelor of Arts degree from Columbia University where he majored in engineering.

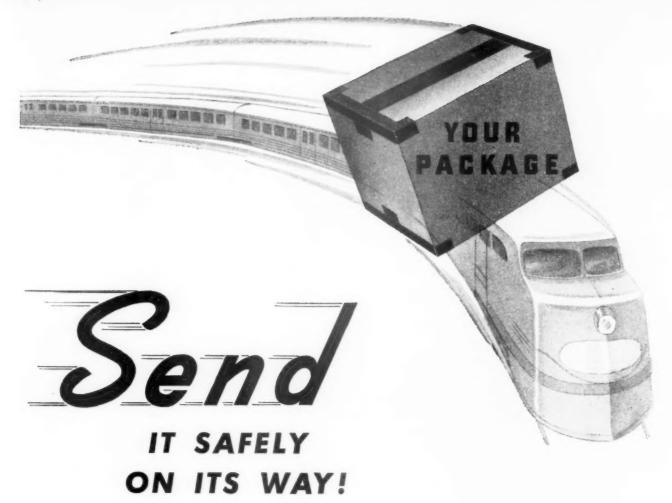
Rolph E. Bowie has been appointed Purchasing Agent of Argus, Incorporated, Ann Arbor, Michigan.

Glenn Rothell, discharged as a major in the U. S. Army Air Forces, later notified of his promotion to Lieutenant Colonel, has resumed his position as Assistant Purchasing Agent, Texas Electric Service Co., Fort Worth, Texas.

Henry Coit has resigned as Purchasing Agent for Geophysical Service, Inc., Dallas, Tex., to become connected with the sales department of the Wink Supply Company, Dallas.

James E. Steele, recently returned from approximately two and one-half years' service in the Navy has resumed his former position as Purchasing Supervisor with The United Illumination Company, New Haven, Conn., reporting to E. D. Emigh, Purchasing and Stores Supervisor.

(Continued on page 292)



Don't risk the hazards of a cheap tape costing a few cents less when shipping losses and damage amounted to \$124,000,000 last year alone. Protect the time, skill, and reputation your product represents with a safe package—safety insured with Tanglefoot Gummed Kraft Sealing Tape. Tanglefoot Tape actually costs you nothing . . . gives faster wrapping production, reduced overhead, product protection. Get Tanglefoot Gummed Kraft

Sealing Tape for greater safety insurance.

Other Products of The Tanglefoot Company

DIFUSO and the DIFUSOLIER
TREE TANGLEFOOT
TANGLEFOOT FLY PAPER

### THE TANGLEFOOT COMPANY

Grand Rapids 4, Michigan

NEW YORK . CHICAGO . KANSAS CITY

APRII



### foundation of a GOOD RHEOSTAT

The first Ward Leonard Rheostats were built with a steel plate base. Its rigidity protected insulating enamels, proved an excellent dissipator of heat and a substantial foundation for circuit and control members. Many of those early Rheostats are in service today. While these Rheostats have been modernized, operate smoother, and offer more steps of control they are still built on a rigid steel plate.



With the wide range of types and sizes of Ward Leonard Rhoostats, you will find the one to meet your requirements — from the smallest electronic to the largest industrial application. Send for Rheostat Bulletins today.

# WARD LEONARD

RELAYS • RESISTORS • RHEOSTATS

Electric control (1) devices since 1892

WARD LEONARD ELECTRIC CO., 50 SOUTH ST., MOUNT VERNON, N. Y.



Jelliff has all the facilities for making fuel strainers. Wire drawing, weaving, and fabricating all in one plant — each step carefully watched by an inspector trained for that particular job. Rigid adherence to specifications and tolerances is guaranteed; AND SHIPPING SCHEDULES ARE MAINTAINED.

The C.O. JELLIFF MFG. CORP. 22 PEQUOT AVENUE · SOUTHPORT, CONN.

(Continued from page 290)

Devora Boyer has returned to the Walker Co., manufacturers of farm tools, Seattle, Wash., as Purchasing Agent.

Ed McCoffrey has returned to the Bethlehem Steel Co., Seattle, Wash., as Assistant Purchasing Agent after 18 months in the Navy.

Arthur Erickson is supervisor of the Northwest District Purchasing office of the Union Oil Company, Seattle, Wash.

Horold Morrison has been appointed District Purchasing Agent for the Union Oil Company, San Francisco, Calif.

Dean H. Banta, returned war veteran, is back at his desk as Purchasing Agent for the Inland Empire Paper Co., Millwood, Wash.

C. W. Thomsen succeeds Fred Elkinton as Purchasing Agent for the Philadelphia Quartz Co., Tacoma, Wash., the latter having been transferred to Berkeley, Calif.

W. R. McMoster has been named Assistant Purchasing Agent, Edgewater Steel Co., Pittsburgh, Pa. He has been with



the company since 1918, serving as plant storekeeper until February 1942 when he was transferred to the Purchasing department as buyer. Before joining Edgewater Steel he was a division storekeeper for the Pennsylvania Railroad Company.

Edgar C. Outten was recently sworn in as Purchasing Agent, City of Pasadena, Calif. He has been in city employ for the past 12 years, serving as deputy city treasurer. Mrs. Nemo Paddock was sworn in as Deputy Purchasing Agent, succeeding Mrs. Francis Aitken.

Col. William R. Maris has been appointed Director of Purchases for the Burry Biscuit Corporation, Elizabeth, N. J., supervising the buying activities of all Burry divisions and subsidiaries. He recently retired from the armed forces.

William J. O'Conner, recently discharged from the U. S. Coast Guard, is now Purchasing Agent for The Holo-Krome Screw Corp., Hartford, Conn. Prior to his enlistment he was employed in the purchasing department.

(Continued on page 294)



send for this slide-rule on product identification



### NAMEPLATES

Don't let unusual surfaces deprive your product of the smarter effect and lower cost of Decal nameplate identifications. Send for Meyercord's new Nameplate Selector and see how scientifically produced Decal nameplates can take the toughest surfaces in their stride. There's a Meyercord Decal for every surface, from standard Kwik-Ways to highly specialized types resistant to acid, abrasion, temperature extremes, moisture-for application on any shape or kind of commercial surface. No rivets, bolts or screws required. They can be produced in any size, design or number of colors. And they last.

Let the new Meyercord Decal Selector help you specify the right Decal for product trademarks, instructions, patent data or diagrams. It's another Meyercord service that is yours on request. Write for one today. The supply is limited. Address Dept. 61-4

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Bring the Boys Home ... with Victory Bonds!

THE MEYER (CORD)

World's Largest Decalcomania Manufacturers

· CHICAGO 44, ILLINOIS WEST LAKE STREET . .

FASTENING METHOD ...



INTERNAL WRENCHING



# HOLO-KROME

fibro forged SOCKE SCREWS

COMPLETELY COLD FORGED



. . . SAVE WEIGHT - Size of members reduced and the fastening placed at the desired location . . . SAVE SPACE—simplified and more compact design of members because of minimum clearance of internal wrenching feature . . . SAVE ASSEMBLY TIME - increased speed plus tighter and more positive tightening . . . SAVE WEIGHT, SPACE, TIME by specifying "Holo-Krome FIBRO FORGED Socket Screws" - The Completely Cold Forged Screws.

HARTFORD 10, CONN.

THE HOLO-KROME SCREW CORP.

(Continued from page 292) Don Pugh has resigned as Purchasing Agent for the Deer Park Lumber Co., Deer Park, Wash., to go into business for himself. A successor has not yet been appointed.

Denfon H. Covert, Purchasing Agent, Endicott, N. Y. plant of International Business Machines Corporation, recently completed 25 years of service with the company, thereby becoming eligible for membership in the IBM Quarter-Century Club. He is a director of the Syracuse & Central New York Purchasing Agents Association

Emanuel Weingraub has rejoined the Garod Radio Corporation, Brooklyn, N. Y., as Purchasing Agent after thirty months' service in the Navy.

Russell Clarkson has been named Manager of Purchases and Traffic for the Mesta Machine Company, Pittsburgh, Pa.

Wolter E. Cummin, Purchasing Agent, White Laboratories, Newark, N. J., addressed the New York Chapter of the



National Industrial Advertisers Association on March 11, his subject being "What the Purchasing Agent Expects from Advertising." Mr. Cummin also lectured at New York University on March 28th, covering the subject of Purchasing in a management course sponsored jointly by N. Y. U. and the Dressmakers Union.

Harvey Ault has been named Purchasing Agent for The Lagonda National Bank, Springfield, Ohio, succeeding Frank

H. E. Oliver has succeeded R. S. Holden as Purchasing Agent for the Harbor Plywood Co., Hoquiam, Wash., the latter having been made plant superintendent for the newly organized Olympic Manufacturing Co., Aberdeen, Wash.

J. S. Gowdy replaces C. L. Williams as Purchasing Agent for the Wyatt Metal and Boiler Works, Houston, Texas, who resigned to go into business for himself. Mr. Gowdy was a member of the Seabees for over three years, serving one year in California, 18 months in the Aleutians, and six months in the Hawaiian Islands. He was connected with Wyatt prior to joining the Seabees and has had broad experience in the general engineering field.

(Continued on Page 296)

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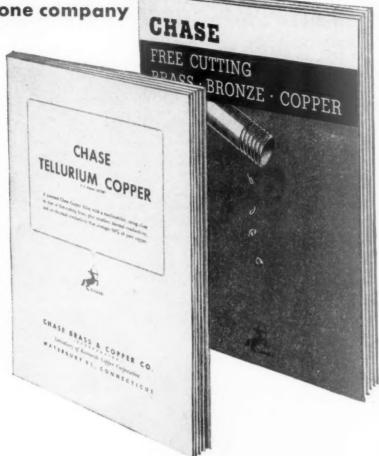
(with

ALBANY BALTIMO BOSTON CHICAG How these two books helped one company

to solve a fabricating problem . . . stop tool breakage . . . and speed production



(with an assist by the Chase representative)



A subcontractor was having difficulty with some 13%" Tellurium Copper rod. His telephone message was turned over to the Chase salesman.

When our man arrived at the plant he found that the subcontractor had been putting a slot in the Tellurium Copper rod, using a milling machine and high speed tool steel. Result: tools were constantly being broken, and production lagged.

So the salesman suggested that stellite or carbide tipped tools be used, pointing out that Tellurium Copper does not have the lubricating qualities of leaded copper alloys, (see booklet, CHASE FREE CUTTING BRASS, BRONZE AND COPPER, page 11). He also talked informatively about machine speeds (booklet, page 19).

The Tellurium Copper worked perfectly when the subcontractor tried these suggestions. It was a case of the right metal but the wrong kind of cutting tools to go with it.

\* \* \*

It's part of every Chase salesman's job to understand the customer's fabricating problems, and be able to suggest better ways of working with Chase brass mill products when occasion demands. Often, however, you may save yourself valuable time by referring to one of our technical books.

For a complimentary copy of TELLURIUM COPPER, FREE CUTTING BRASS, or any other booklet by Chase (an outline of your problem is sufficient), write to Dept. P-46.



### CHASE BRASS & COPPER CO.

— Incorporated —
Waterbury 91, Connecticut
SUBSIDIARY OF KENNECOTI COPPER CORPORATION

ALBANY† ATLANTA† BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON ‡ INDIANAPOLIS KANSAS CITY, MO † LOS ANGELES MILWAUKEE



MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† SAN FRANCISCO
SEATTLE
ST. LOUIS
WASHINGTON †
† Indicates Sales Office Only

This is the Chase Network - handiest way to buy brass

# SMALL PUMPS CORRECTLY ENGINEERED FOR YOUR NEEDS

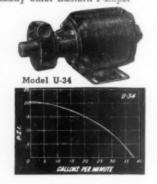
Eastern has designed and built pumps to meet manufacturers' specific needs for many years. Some of these needs have been complex, where the design of a completely new pump was necessary to solve a pumping problem never before encountered. Others were run-of the-mill, where one of Eastern's standard pumps from a line of over 600 different modifications was recommended with the knowledge that it would do the job required of it. Only a company with mechanical, electrical and chemical engineers on its staff could know the

correct solution to so many and varied pumping problems. Eastern has such a diversified engineering staff. Thus your pumping problems, especially where small size and light weight combined with high performance and economy of operation are factors, are assured of quick solution. Special pumps when designed and approved, can be put into production when a reasonable quantity is involved.

Illustrated here is a new Eastern Centrifugal Pump. Write for NEW catalog showing many other Eastern Pumps.

#### VOLUTE CENTRIFUGAL PUMP

Model U-34 illustrated, is designed for handling moderate volumes at relatively high heads, utilizing a minimum of space. It may be used for continuous duty operation. It is an excellent transfer pump. Close-coupled with open impeller mounted directly on motor shaft extension without use of an internal pump bearing. Available with mechanical rotary seal only. Standard models available in Monel Metal, Stainless Steel, Cast Iron, and rough or finished Bronze. Quotations on other alloys on request. Power: Heavy duty General Electric ball bearing motor in various frame enclosures and for almost all current requirements either 1/3 H.P. or ½ H.P. as the application demands. Weight: 36 lbs. Size: 12½" x 6½" x 6½". Pump performance shown on chart illustrated here.



### EASTERN ENGINEERING COMPANY 61 FOX STREET NEW HAVEN 6, CONN.

# How much fuel, energy and equipment could you save by saving conditioned air?

.

Converting 1000 CFM of stale, odorous air to fresh air with Dorex activated carbon Air Recovery Equipment, instead of bringing in and conditioning outdoor air, saves:

100,000 BTU of installed heating capacity
3 tons of installed refrigeration
1800 KW hours of current per cooling season
1500 gallons of fuel oil or
9 tons of coal per heating season
Incidental water consumption and maintenance

Per 1000 CFM of heated or cooled air saved

The above savings are figured for average temperate zones. Some installations have shown greater savings, some less. But in every case, Dorex Air Recovery has converted contaminated air to fresh air at a cost much below that required to replace it with an equal volume of outdoor air.

We will be glad to give you the details on actual savings in typical installations or estimate the savings on any existing or planned system. For full information call the nearest District Representative or write Dept. P-9.

### W. B. CONNOR ENGINEERING CORP.

AIR RECOVERY . AIR PURIFICATION . AIR DIFFUSION

114 East 32nd Street



New York 16, N. Y.

(Continued from page 294)

R. J. Kirstin succeeds Ray P. Brickley as Purchasing Agent for Borden's, Detroit, Mich.

Stuort G. Schifrin succeeds Edward C. Volz as Purchasing Agent for the Original Tire Company, Cincinnati, Ohio.

### AMONG THE COMPANIES YOU BUY FROM

Pittsburgh Plote Gloss Co., Columbia Chemical Division, Boston office: William L. Platt, formerly associated with the company's Glass division, has been made sales representative with head-quarters at 300 Babcock Street, Boston.

Ampco Metal, Inc., Pittsburgh office: R. H. Munn, Jr. has rejoined the company as manager and field engineer, after five years service with the U. S. Army. Mr. Munn will make his head-quarters at 732 Frick Building. Newark office: W. J. Nebel has been transferred from the Wisconsin district to the New Jersey area as field engineer, with offices at 1060 Broad Street.

Sylvania Electric Products, Inc., New York office: Harold P. Gilpin, formerly manager of Equipment Tube Sales, has been promoted to the position of assistant gen-





H. P. Gilpin

B. J. Erskine

eral sales manager of the Radio Division. Emporium, Pa. office: Bernard J. Erskine has returned after three years Naval service as manager of parts sales, Radio Tube Division.

Stor Electric Motor Co., Cambridge office: Elliott W. Knight has been appointed district manager of the newly opened New England office at 1430 Massachusetts, Cambridge, Mass.

Notional Starch Products Inc., South Boston office: S. F. Thune has been appointed manager of the New England Division with headquarters at 15 Elkins Street.

International Nickel Co., St. Louis office: G. A. Fisher, Jr. has been placed in charge of the newly orened St. Louis technical section of Development and Research Division, at 411 North Seventh Street. This is the third new technical section which has been opened in recent months. One was opened in Cincinnati, and another in Minneapolis.

(Continued on page 298)



WHEN your shipments travel in Wirebound Boxes or Crates, there is no question about "it"! The practical experience behind the design and manufacture of Wirebounds is double-checked on modern laboratory equipment . . . thus, you can feel with confidence that Wirebounds can take it!

Send for free twenty-four page booklet which tells how you can easily gain Wirebound advantages.

Drop tests subject all corners and faces to sudden shock and distorting impacts.

Wirebound Box Manufacturers Association, Room 1821 Borland Building, Chicago 3, Illinois.





for THE MEN WHO"Button Up" THE SINEWS **OF INDUSTRY** 

vertisement appearing in Fortune Magazine)

To men on location who must rivet or weld the sinews of industry according to details of the building layout, Allied offers help, as well as to the architects and engineers who design the structures.

Many fabricating and erection short-cuts have been learned during war years, and Allied engineers are glad to co-operate in interpreting plans quickly and in super-fast assembly of precision units fabricated

for the job.

This Allied experience working in harmony with contractors and engineers can but result in economics wherever steel structures rise. Let Allied team with you in fabricating and erecting the steel for your buildings.



(Continued from prge 296)

Grayba: Electric Co., Chicago office: Donald R. Edge has been promoted from assistant rural line sales manager to the position of rural line sales manager, succeeding K. B. Mayer, who is retiring.

Bristol Co., New York office: G. H. Gaites, regional sales supervisor of the



Cleveland and Pittsburgh sales territories, has been appointed district manager of New York with headquarters at 250 West 57th Street.

Link-Belt Co., Philadelphia office: Joseph J. Gilbert, recently returned from his wartime service with the U. S. Army, where he attained the rank of Lieutenant-Colonel, has assumed the position of sales engineer, Sanitary Engineering Di-

Paisley Products, Inc., Chicago, Ill.: Skilly T. Knox has been appointed special representative to the set-up paper box,



folding box, and paper converting field. Mr Knox will cover the entire middle western territory.

Jessop Steel Co., Washington, Pa.: Robert A. Parks has been named general sales manager of the company. Mr. Parks was formerly district manager in Washington, D. C.

Norton Co., Worcester, Mass.: Russell L. Peck has been appointed refractories engineer. Mr. Peck will cover Philadelphia, Delaware, Eastern Maryland, Eastern Virginia and Eastern North Carolina.

Corboloy Co., Detroit, Mich.: A. F. Dobbrodt has been named Special Products engineer to head a new division of that name in the general sales department in Detroit. F. J. Staroba, formerly in Milwaukee, has been transferred to the Chicago office, as has E. Monacelli,

(Continued on page 300)

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Common Sense Assembly Engineering

# SAVES A MINUTE... AND MULTIPLIES IT BY THOUSANDS

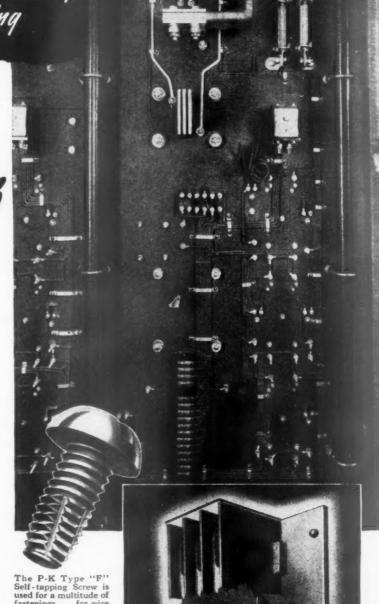
It's CERTAINLY sound common sense to save any assembly time which does not add to your product or your profits. The way the I. T. E. Circuit Breaker Company of Philadelphia saved it ... in assembling switchboards and circuit breakers. They used P-K Self-tapping Screws everywhere possible, in many kinds of materials. The minutes saved by eliminating individual tapping operations are multiplied many thousands of times in assembling this kind of apparatus. That rates as common sense assembly engineering!

You don't know . . . we don't know . . . whether or not P-K Screws would save you money on your assembly job. But we do know that in 7 out of 10 jobs submitted to us, P-K Screws do the job better, for less. Why not find out if your job is one of the lucky seven?

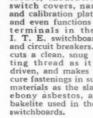
### Let a P-K Assembly Engineer prove it

The way one manufacturer makes fastenings with P-K Self-tapping Screws illustrates only a small part of the advantages of these unique fastenings. Maybe your product needs some of the many other advantages of P-K Screws. With the help of a P-K Assembly Engineer you can find out . . . either by his calling on you, or your mailing in assembly details . . . both without obligation. Parker-Kalon Corp., 208 Varick St., New York 14. N. Y.

Sold Only Through Accredited Distributors



The P-K Type "F"
Self-tapping Screw is
used for a multitude of
fastenings...for wire
cleats, insulation,
switch covers, name
and calibration plates,
and even functions as
terminals in these
1. T. E. switchboards
and circuit breakers. It
cuts a clean, snug fitcuts a clean, snug fit-ting thread as it is driven, and makes se-cure fastenings in such materials as the slate, ebony asbestos, and bakelite used in these switchboards.

















PARKER-KALON

SELF-TAPPING SCREWS

A FASTENING FOR EVERY METAL AND PLASTIC ASSEMBLY

APRIL,

### DARNELL CASTERS

# E-Z ROLL WHEELS

Darnell Casters and Wheels are pre-tested for efficiency and durability-you are assured a long life of satisfactory service.

> DARNELL MANUAL



**A SAVING** AT EVERY TURN

DARNELL CORP LTD LONG BEACH 4, CALIFORNIA 60 WALKER ST. NEW YORK 13, N.Y. 36 N. CLINTON, CHICAGO 6, ILL (Continued from page 298)

who was formerly located in St. Louis. Replacing Mr. Monacelli, C. W. Powell, previously of the general sales department, has been transferred to St. Louis. R. B. Lewis, service engineer at the home office, has been transferred to Chicago.

Graybar Electric Co., New York office: Major Ernest R. Meserve has returned as Eastern Divisional merchandising manager.

Lewis Foundry and Machine Division, Blaw-Knox Co., Pittsburgh, Pa.: A. L. Ralston



has been promoted to the position of manager of roll sales.

Koppers Coal Division, Pittsburgh, Pa.: Paul J. Stein has been appointed industrial service engineer. He will supervise the service offered by engineers attached to the district offices, and specialize on recommendation of coals for industrial and utility steam generating purposes.

Auto-Lite Battery Corp., Washington, D. C.: R. E. Hilkert has been named district representative.

Dearborn Chemical Co., Chicago, Ill.: John F. Wilkes, after four years service

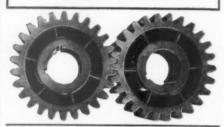


with the Army Signal Corp., has returned as technical director of the Railway De-

Westinghouse Electric Supply Co., Pittsburgh, Pa.: Several new branch managers have been appointed. The appointees and the territories they will cover are as follows: C. G. Ward, manager of Peoria, Ill.; R. P. Smith, manager of Midwest district, St. Louis, Mo.; R. H. Sroufe, manager of Portland, Oregon; R. T. Rogers, manager of DesMoines, Iowa to succeed Mr. Srouse; J. G. Lee, manager of Sioux City, Iowa; Earl E. Morton, Northwestern district appliance

(Continued on page 302)

### SIMONDS GEARS

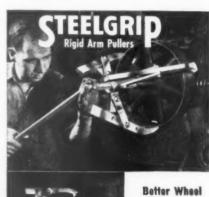


QUALITY GEARS OF ALL TYPES .... MADE TO YOUR ORDER

SPUR · BEVEL · MITRE WORMS · WORM GEARS · RACKS Cast and Forged Steel, Gray Iron. Bronze, Silent Steel, Rawhide, **Bakelite** 

Distributors of RAMSEY Silent Chain Drives & Couplings

THE SIMONDS GEAR & MFG. CO. 25TH AT LIBERTY PITTSBURGH 22, PA.





Pullers for **Every Need** 

STEELGRIP

STEELGRIP
standard types with
drop forged arms
and special analysis
steel screws in all
sizes for pulling
wheels, pulleys,
and universal CHAINGRIP Pullers that pull
wheels, etc. even a considerable distance from
end of shaft. Write for Catalog.

ARMSTRONG-BRAY & CO. 5378 Northwest Highway, Chicago 30, U. S. A.



# SGAMINATION OF THE PROPERTY OF

### When SCOVILL becomes your METAL PARTner

### You Can Cut Costs on Metal Parts like these

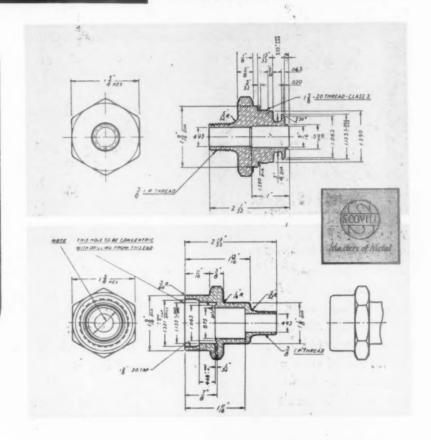
These drawings show the two parts of a special coupling forged and machined by Scovill. Both parts were previously turned out on a screw machine from 134" hexagonal brass bar stock... the male section requiring 2,050 lbs. of rod per thousand pieces... the shank section requiring 2,500 lbs. When Scovill did the job by forging, metal requirements of the male section dropped to 884 lbs... the shank to 964. Total savings of brass were 2,702 lbs. per thousand assemblies.

Although the forging and machining of these pieces involved no particular engineering skill, this case study shows how Scovill's fast metal-working equipment can turn out parts from less metal at lower costs.

If you suspect that your brass, aluminum and other non-ferrous metal parts are costing you too much or can be made better in another design, you're ready to talk things over with Scovill. Scovill's long forging experience has probably licked tougher problems than yours.



INVESTIGATE SCOVILL. All you have to do to discover whether you'll benefit from making us your METAL-PARTner, is to fill in the coupon below and mail it today. Scovill Manufacturing Company, Waterbury 91, Conn.



Please send me information about your metal-working facilities. I am interested in metal forgings for the applications checked:		SCOVILL MANUFACTURING COMPANY Forgings Division
Aircraft	Fire Extinguishers	21 Mill Street
Automobiles '	☐ Household Appliances	Waterbury 91, Connecticut
Band Instruments	☐ Industrial Instruments	
☐ Blow Torches	Plumbing Goods	
Cameras	Pumps	Name
Communication Equipment	Valves	
Compressed Gas Cylinders	☐Welding Equipment	Company
0.1		. **
Other applications		Address



In many assembly applications, a SPECIAL part or fastening designed for the specific purpose will take the place of two or more separate parts or fastenings, and reduce the cost to a single unit and one operation. For example, a threaded fastening can be designed to include an integral holding, supporting, locking, attaching, bridging, flange, pivot, or other supplementary part.

Examine the SPECIAL fastening part outlined in group illustration above. The tapered faces and keyway in head, with attaching post and knob on threaded end obviously save the cost of extra parts and operations, reduce assembly time, provide simple stock control and self-balanced inventories.

More than ever before, alert manufacturers are analyzing their production operations to effect every possible economy in materials and man hours. It will be to your advantage to investigate the economy

features of SPECIAL parts and fastenings.

Our engineering skill and precision production facilities for this type of work are unsurpassed. We invite your inquiries. Send complete details of desired application. Our Technical Staff will gladly submit recommendations for the most efficient and economical fastening.



50% SAVINGS

Recessed Head Fastenings

As bit connot alip from recessed head, spiral and power drivers can be safely used, even on finished parts, to cut your fastening time in helf!

CONTINENTA SCREW CO. New Bedford. Mass., U.S.A.

(Continued from page 300) manager in Chicago, Ill.; Ray B. Mowe, manager of Fort Wayne, Ind.; and Douglass B. Williams manager of the East Central district with headquarters in Pittsburgh.

B. F. Goodrich Co., Akron, Ohio: W. L. Fluke, v-belt sales engineer, has been sent to Los Angeles where he will promote sale of v-belt sheaves and related transmission equipment. L. S. Minick has gone to Mexico City, where he will be a salesman for Compania Hulera "Euzkadi", the associate company in Mexico.

Foirbanks, Morse & Co., Chicago, Ill.: C. L. Richard, previously with the Ordnance Bureau of the U. S. War Depart-



ment as advisor and consultant on problems of gaging and weighing in the ammunition production industry, has been named a special representative of the Scale Division.

Edgcomb Steel Co., Baltimore, Md.: J. Raymond Smith has been named district manager of Baltimore, with offices at 1625 O'Sullivan Building.

Gulf Oil Corp., Pittsburgh, Pa.: Lt. Col. H. N. Hill, until recently assistant to the district chief of the Birmingham Ordnance District, has been made manager of railway sales.

General Box Co., Chicago, Ill.: James Ferguson, long associated withe the company as sales and production manager



of the Kansas City office, has been promoted to the position of sales manager, with headquarters in Chicago.

American Welding & Manufacturing Co., Mid-West district: David Crawford has been named district sales manager of the territory including Southern Ohio, Kentucky, Indiana, and a portion of Illinois. Chicago office: W. D. Cleavenger has (Continued on page 306)

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### **Total Flooding Kills** Fires in 20 Seconds

When fire breaks out in a room housing a fiammable liquid or electrical equipment hazard, a Kidde total flooding system extinguishes the flames in 20 seconds—or even less.

onds—or even less.

As the name indicates, a total flooding system, by discharging carbon dioxide into the protected area, dilutes the oxygen content within the entire room to a point where fire can no longer exist. Such a system can be engineered for either automatic or manual discharge of the carbon dioxide.

Carbon dioxide capacities are calculated on the basis of the size through openings. For full details on total flooding systems write quate allowance for leakage Walter Kidde & Company. Inc

rding to assignment a will go library, additorium to China and still work with music room, gymna to China and still work with music room, gymna

### Short Story on TRIGGER CONTROL



For a quick-reading sum-mary of the outstanding advantages of Trigger-grip Control (now Kidde Hand

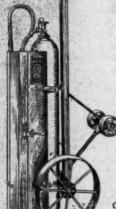
Portable Extinguishers) write for free copy of 4-page bulletin AD531. Walter Kidde & Company. Inc., 450 Main Street, Belleville 9, N. J.



# Slam the door on Flames!

Process rooms and other hazardous areas can be automatically 'isolated, if desired, as part of the operation of Kidde built-in systems. Release of the carbon dioxide actuates trips which allow fire doors and windows to close. Time delay mechanisms allow workers plenty of time to leave before doors close.

### Kidde



### **GETS TO FIRES** FAST

Kidde Wheeled Units are easy to maneuver-pack a terrific fire-fighting punch! 50, 75 and 100-pound carbon dioxide capacities.

Mail and Phone Orders Filled



No special training needed to operate the Model 15 Portable. Just aim at the fire and pull the trigger! Same design available in 10 and 20-pound capacities.

Mail and Phone Orders Filled

The wood "Kidde" and the Kidde test



norte of Walter Kidde & Company, Inc.

Walter Kidde & Company, Inc.

450 Main Street, Belleville 9, New Jersey

Disorders Break Out

General output at factories and mines decreased 4 per cent in Oc-tober, while in the first half of November where the first half of

**Bill May Force** 

stationed in a little town in France \$1,041.66 for several months, wooed a Natur French girl by telling her about 3/3 cent w the

But in S weigh aroun artific an aut He adn Surp to close no occu

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was rep Board e City



# PENINSULARGI

# Engineered

MEET YOUR NEEDS

Every grinding wheel that Peninsular makes is completely engineered to meet all the needs of a job on which it will be used.

First, our field engineers make an "on-the-ground" analysis of the individual requirements of the job at hand.

A special wheel formula is then prepared to exactly fit these requirements.

When the Peninsular "tailored-to-the-job" wheels are completed, they are tested and proved on the actual job itself.

Regardless of what your grinding problems may be, we are willing to stake our reputation that our expert staff of factory and field engineers can help you solve them.

A production, engineering and cost analysis service beyond any offered up to now in the industry stands back of this challenge. Why not call us today?

The Peninsular Grinding Wheel Company, 729 Meldrum Ave., Detroit 7. Sales Offices: Chicago, Philadelphia, Boston, Buffalo, Cleveland, Newark, Pittsburgh, Houston, St. Louis, Cincinnati.

INDIVIDUALLY PENINSULAR ENGINEERED



GRINDING WHEELS

SPECIALISTS IN RESINOID BONDED WHEELS

APRI

(Continued from page 302)

been appointed district manager to succeed F. L. Schneider, with headquarters at 332 S. Michigan Avenue.

Precision Welder and Machine Co., Detroit office: Thomas P. Moran has been appointed district manager, with head-quarters at 6432 Cass Avenue. Pittsburgh office: The Weber-Semmer Company, located at 5108 Liberty Avenue, has been named representatives in the Western Pennsylvania and Eastern West Virginia territory.

General Electric Co., Chemical Department, New York office: Samuel H. Thomas has been promoted to district



sales manager after eight years as sales representative of the Industrial department.

Justrite Manufacturing Co., San Francisco office: Paul V. Miles has been appointed Western manager with temporary quarters at 1085 Monadnock Building.

Dayton Rubber Manufacturing Co., New York office: Eugene Dolan has been assigned to the sales staff, and will make his headquarters at 11 Park Place.

Boy Stote Abrosive Co., Chicago office: Henry L. LeMay has been named manager. For the past three years, Mr. LeMay



has been active in the abrasive sales field in Chicago where he was associated with Norton Company.

Rust-Oleum Corp., Evanston, Ill.: Five new factory representatives have been appointed. The representatives and the territories they will cover are: Evanston office, L. R. Nelson, Chicago industrial area; St. Paul office, Erwin Randt, Minnesota, Wisconsin, Iowa, North and South Dakota, Nebraska and northwestern Illinois; Wichita office, Leonard Beels, Kansas and Oklahoma; Columbus

(Continued on page 308)



JOHN H. GRAHAM & CO. INC. 105 Duane Street, New York 8, N. Y.

**General Sales Agent** 

GRIFFIN Hack Saw Blades

MADE BY G. W. GRIFFIN CO., FRANKLIN, N. H. Hack and Coping Saw Blade Specialists Since 1880

# AUTOMATIC TACKERS are Now Ready for you

Speed up operations and save precious time with these fine stapling tools. Model CT 830 can be used in shipping rooms for attaching tags, receiving tickets, inventory tags, and packing lists. Ideal for display studio and store use, such as window trim, posters, valances, backgrounds, table coverings, and point of sale advertising.

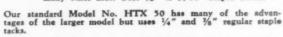
Used in manufacturing plants where hammer and tacks were formerly used; such as furniture and chair factories where cloth, leatherette, etc., is stapled to wood and other base materials.





Model HT 755 feeds and drives heavier type staples with the ease of a light hammer stroke, is well balanced and has low fatigue factor. 168 Staple Tacks load easily and quickly in handle magazine—Operates with one hand.

Used where longer staples are required for driving in harder materials — in factories for heavy duty work — for tacking ends in wire bound shipping boxes, and many other uses. Uses 3/8" to 9/16" Staple Tacks.



Used for shipping room — and industrial tacking operations, such as TAGGING, PACKING LISTS, and thousands of other uses.

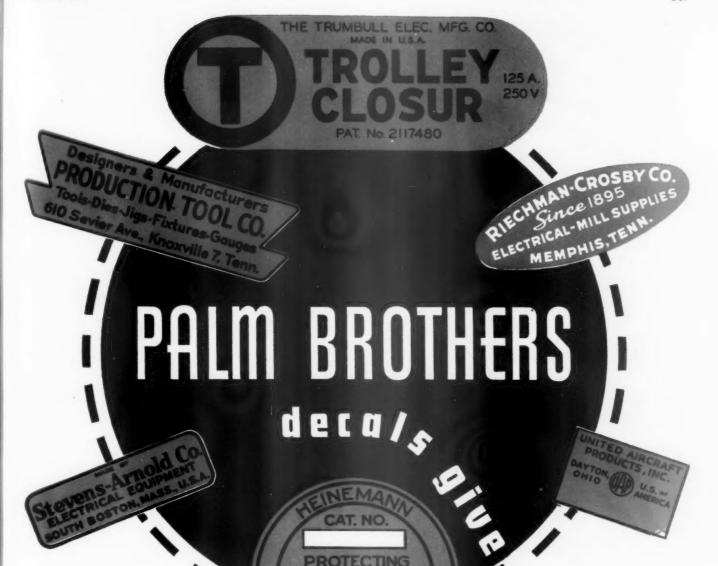


Model ST 755 — the plunger extends up through top, terminating in a knob that is operated by hand strike or with a 12 ounce rubber mailet. Ideal for spotting staples in exact locations. For precision tacking, and for tacking rubber or cotton filled gaskets to refrigerator doors — guides can be easily attached. Uses 3%", ½" and 9/16" heavy duty staples. Give details of your application to our engineering department.

FASTENER CORPORATION

871 Fletcher Street

Chicago 14, Illinois



Palm Brothers Decals are ideal for your identification and instruction data requirements, and may be serially numbered. These famous Decals make a handsome appearance and can be used on any commercial surface.

See for yourself! Samples submitted without obligation. Write today for Catalog No. 10.

EYE-APPEAL PERMANENCY ECONOMY



APRIL

Photo

(Continued from page 306)

office, E. N. Dancey, Ohio, Indiana, Kentucky, West Virginia and the Pittsburgh area; Detroit office, W. A. Risk, eastern half of Michigan and the Detroit and Toledo areas.

Reliance Electric & Engineering Co., Cleveland, Ohio: Edward E. Helm, previously general sales manager, has been elected sales vice-president of the company.

Federal Electric Products Co., Michigan



area: W. F. Benson has joined the company as district sales representative.

Electric Storage Bottery Co., Philadelphia, Pa.: W. Van C. Brandt has resumed his former position as manager of Exide Motive Power sales, after serving in the Navy during the war.

Ohio Bross Co., 'Mansfield, Ohio: J. R. Imler has rejoined the company as assistant manager of the Valve department, after five years in the Army.

Ward Leonard Electric Co., Newark office: R. W. Vonasch, formerly attached to the home office gales department, has been made district manager of the newly established North Jersey office in the Industrial Office Puilding.

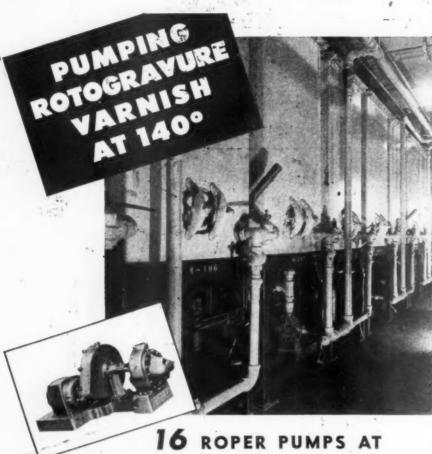
Alloy Costing Co., Philadelphia office: Thomas J. Donovan, Jr. of the Donovan Company, 1615 North Second Street, has been appointed engineering representative in the sale of heat resistant and stainless steel eastings. He is covering Philadelphia, Baltimore, the eastern half of Pennsylvania and the state of New Jersey.

### INDUSTRIAL DEVELOPMENTS

American Brake Shoe Co., New York, N. Y. The name of its abrasion-resistant material, ABK Ni-Hard Alloy, has been shortened to ABK Metal, which is now being produced at Mahwah, New Jersey, and Melrose Park, Illinois.

Bemis Bro. Bog Co., St. Louis, Mo. A. C. Carpenter, first vice-president, and A. V. Phillips, second vice-president, are retiring as officers after 49 and 54 years of service respectively. They will continue

(Continued on page 310)



AMERICAN PRINTING INK COMPANY

Since 1940, the 16 Roper pumps, located under the varnish storage tanks illustrated above, have been used to transfer heavy Rotogravure varnish from varnish producing kettles to storage tanks, and from the varnish storage tanks to the millroom. The heavy varnish is handled at a temperature of 140°.

This is another example of Roper adaptability to a wide range of pumping requirements. Your plant, too, can benefit from the many time-tested Roper features that insure dependability, economy, long life.

### Pumps to Fit Your Needs

Roper engineered pumps are built in many sizes and types for pressures up to 1000 lbs. and capacities up to 300 g.p.m. Standard precision-machined parts assembled to meet individual requirements. Consult our experienced field engineers, located in principal cities, or write factory today.

### Send For FREE Booklet "How To Solve Pumping Problems"

A valuable guide for those interested in operating pumps. Filled with factual time-saving information regarding pumping operations.

#### GEO. D. ROPER CORPORATION

394 Blackhawk Park Avenue
ROCKFORD, ILLINOIS

PUMPS ESPECIALLY ENGINEERED TO FIT YOUR REQUIREMENTS

PUMP AND

FLANGE MOUNTED









UILDERS OF PUMPS FOR MANUFACTURING, MARINE, PETROLEUM, AND PROCESS INDUSTRIE

AL

# 5 TONS OF PROOF

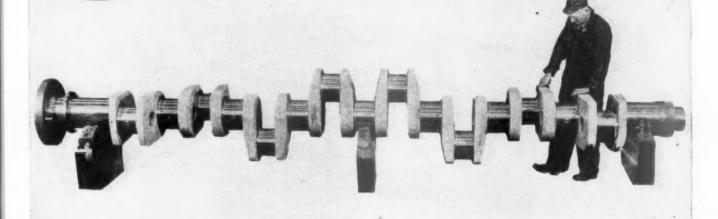


Photo courtesy of Enterprise Engine and Foundry Co., for whom casting was made by Campbell, Wyant and Cannon Foundry Company.

### ...that CHATEAUGAY makes TOUGH casting jobs EASY

• It takes real experience to cast a sound, eight-throw crankshaft, twenty feet long, weighing five tons and possessing unusually high strength. And it takes mighty good pig iron, too!

That's why this and other equally difficult castings are made from Chateaugay—Republic's low-phosphorous, copper-free iron with the ability to do things which other irons cannot do.

Chateaugay flows with exceptional fluidity
... fills the most intricate molds completely
... is ideal for castings with joining light
and heavy sections.

Moreover, castings made of Chateaugay machine freely and economically. They provide hard wearing surfaces. They also offer unsurpassed resistance to heat and acids.

If you are not already experiencing the trouble-free advantages of Chateaugay, it will pay you to use this versatile pig iron that gives better casting results all of the time. A Republic metallurgist will be glad to discuss Chateaugay with you. Just let us know when you would like to see him.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES • CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, N. Y.



Republic PIG IRON

'CHATEAUGAY'
Low-Phosphorus,
Copper-Free

"REPUBLIC"
(Northern)
Foundry, Basic and

"PIONEER" (Southern) Foundry and Bas



ALSO TRUSCON FOUNDRY FLASKS-REPUBLIC CORE WIRE-FOUNDRY NAILS



APR





### A MAGIC CARPET FOR INDUSTRY

Load · Veyors combine great strength and light weight. Exclusive Market Forge features grid construction supports ball bearing rollers on both sides . . . hardened inner and outer ball bearing races min-imize wear . . . Load-Veyors may be used on either side . . . rails on reverse side provide for conveyance of small



Write for name of nearest Industrial Distributor who C - Full line of curves, guard rails and accessories available. stocks this equipment. MARKET FORGE COMPANY, 81 GARVEY ST., EVERETT 49, MASS.



(Continued from page 308) with the company as directors and senior counselors. Four new officers have been elected: H. V. Howes, director of sales, located at St. Louis, was elected vice president; H. P. Claussen, director of the cotton department located at Boston, was elected vice president; Judson Bemis, manager of the Bemis plant at Minneapolis, was elected vice president; T. W. Little, an executive in the Burlap Importing Department at Boston, was elected treasurer.

Reynolds Metals Co., Louisville, Ky., has been confirmed as the leasee of the government sheet mill at McCook, Illinois by the War Assets Corporation for five years with a purchase option. Acquisition of these rolling facilities further rounds out Reynolds as a completely integrated factor in the aluminum industry from bauxite to finished aluminum production.

Republic Rubber Division, Lee Rubber and Tire Corp., Youngstown, Ohio. O. S. Dollison, previously vice-president in



charge of sales, has been elected vicepresident and general manager. Mr. Dollison has been with the company for 23 years, during which time his experience has embraced virtually every step in sales work.

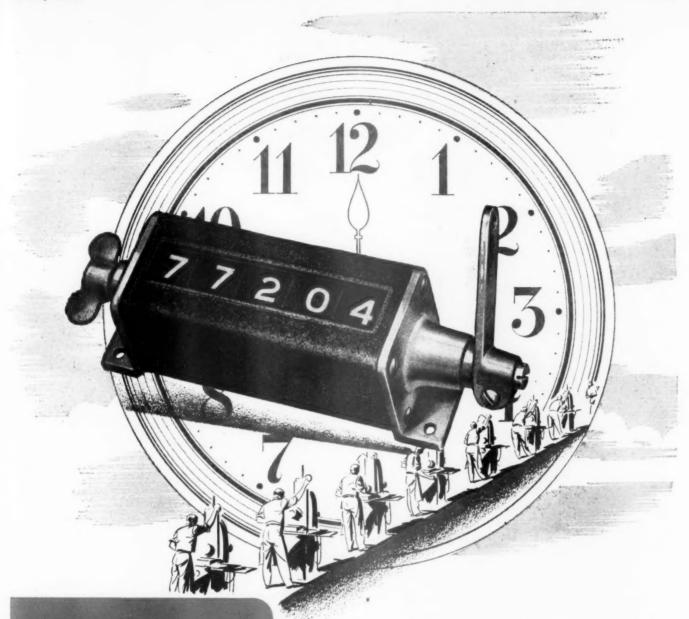
Re-Bo Manufacturing Co. has relocated its plant from Knoxville, Tenn., to Bedford, Va., where the company purchased the former Continental Can Co. property, including plant with 83,000 square feet of floor space.

Davis Boring Tool Division, Larkin Packer Co., Inc., St. Louis, Mo., has been acquired by the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. All standard and special boring bars and cutters will be made at Fond du Lac.

B. F. Goodrich Co. has purchased the airplane and brake division of Hayes Industries, Inc., Jackson, Mich. Charles Hollerith, vice-president in charge of engineering for Hayes Industries, will be associated with the new development program, retaining his position with Haves.

National Electric Products Corp., Pittsburgh, Pa., after 40 years' occupancy at 107 Sixth Street, will move its general offices May 1, to the 13th floor of the Chamber of Commerce Building, 411 Seventh Avenue.

(Continued on page 312)



Production
Really runs
like Clockwork

...when it's geared to Veeder-Root "COUNTROL"

Clocks tell only part of the story on production. But when you relate *elapsed time* to the figures of Veeder-Root Devices . . . then you've got the *whole story*, complete and up-to-the-minute.

For Veeder-Root "Facts in Figures" tell you at a glance whether you are actually getting the full quota of production scheduled for each hour, shift, or day. And if you're not getting it, they show you the lag-points and also the exact extent of the lag. Wherefore, plants in every line of industry rely on these figures as the basis of complete production *Countrol*.

You can get this complete Veeder-Root Countrol in your plant, too ... with Veeder-Root Devices that count or measure mechanically or electrically, in any units you require ... turns, strokes, pieces, electric impulses, or what have you? They're inexpensive, and they're quick and easy to install. Write.



VEEDER-ROOT INC.
Hartford 2, Connecticut

In Canada: Veeder-Root of Canada, Ltd., Montreal
In England: Veeder-Root Ltd. (New address on request)



# CHICAGO "Safety Plus" means extra holding power

Precision-made Chicago "Safety Plus" Products are the solution to many current production problems.

Exacting inspection standards insure sharp, full threads, uniform pitch diameter and clean true sockets. "Safety Plus" Products are manufactured from the finest selected heats of electric furnace alloy steel which provides added strength, toughness—and EXTRA holding power.

These outstanding features combine to make a truly fine product—ideally suited to modern production methods.

These Gine Products are sold only thru Authorized Distributors

### CHICAGO "Safety Plus" line includes:

Socket Head Cap Screws
Socket Set Screws
Stripper Bolts
Square Head Dog Point Set
Screws
Socket Pipe Plugs
Keys for "Safety Plus"
Products

#### Complete line includes:

Hexagon Head Cap Screws
Square Head Cup Point Set
Screws
Headless Set Screws
Fillister Head Cap Screws
Flat Head Cap Screws
Taper Pins
Milled Studs
Semi-Finished Hexagon
Nuts
Semi-Finished Hexagon
Castellated Nuts

(Continued fro page 310)

Witco Chemical Co., New York N. Y., announces the acquisition of the Franks Chemical Products Co., Brooklyn, N. Y. No change will be made in the present management and Joseph M. Franks will continue as president. The company will be known as the Franks Chemical Products Company Division of Witco.

The Fibre Con Mochinery Corporation, Rutland, Vermont, has been acquired by the Continental Can Company. The machinery company was founded for the purpose of developing and making high speed automatic machinery for the production of an improved style fibre container. Continental Can Company's Paper Division now comprises seven paper container, four fibre drum, and one corrugated box manufacturing plants; two paper mills; and the new Fibre Can Machinery Corporation.

Continental Can Co., Inc., New York, N. Y. Hans A. Eggerss, a director and vice-president in charge of paper and



plastics, has been elected executive vicepresident. Mr. Eggerss is also president of the Container Company, a subsidiary.

The Continental Can plant at Humboldt Avenue and Broadway, St. Louis, Mo., has been returned by the Army after nearly four years' use as an ordnance



warehouse. The new \$1,000,000 plant now being reconverted for can-manufacturing will combine operations now carried on in plants at E. St. Louis, St. Louis and Kansas City, all of which will eventually be closed, according to J. F. Egenolf, vice-president in charge of manufacturing.

Pittsburgh Corning Corp., Pittsburgh, Pa., announces plans for a \$300,000 expansion of existing facilities for the manufacture of Foamglas, a glass insulation material, at its Port Allegany, Pennsylvania plant.

Glen L. Mortin Co., Baltimore, Md. The company board of directors has authorized the construction of a \$1,500,000 plant for the manufacture of its new elastic plastic, Marvinol resin. The new

(Continued on page 314)

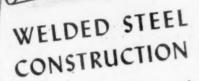
### THE CHICAGO SCREW CO.

ESTABLISHED 1872

1026 SO. HOMAN AVENUE

CHICAGO 24, ILL.





has had the widest and most general expansion of any fabrication method developed in the last thirty years.

for MODERN MACHINES

FRAMES . BASES . PARTS

Van Dorn weldments are precision products . . . fabricated with all the skill that comes from years of specialized experience. Van Dorn weldments bring to modern machines the multiple advantages of greater strength, lighter weight, smoother appearance, better design. They eliminate patterns, permit economical design changes and reduce machining expense.

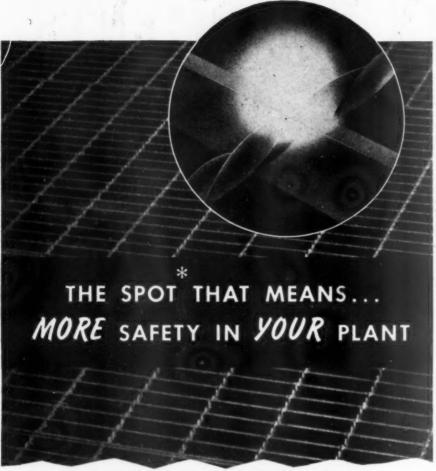
Van Dorn is well equipped to meet your weldment requirements with . . . experienced design engineers and complete manufacturing facilities. Consultation is invited.

Write for the Van Dorn book, "Fabricated Machine Supporting Units." No obligation.

THE VAN DORN IRON WORKS CO.

2685 EAST 79TH STREET

CLEVELAND 4, OHIO



The illustration expresses the application of heat and pressure used to forge crossbars and bearing bars into one integral unit.

There's a big difference between ordinary grating and Blaw-Knox steel grating safety. For Blaw-Knox is the only grating with the electroforged twisted bar.

In factories, on cat-walks—see to it that skid-breeding floors are made skidproof in any weather. Specify Blaw-Knox steel gratings, the only gratings with built-in twisted-bar safety factor.

### ...AND HERE ARE 5 REASONS WHY

- 1. SELF-CLEANING, no sharp corners to clog.
- 2. MAXIMUM OPEN AREA for light and air.
- 3. EASY TO MAINTAIN ... paint reaches entire surface.
- 4. STRONG electroforged construction for easy erection.
- 5. SAFE footing at all times with twisted cross bar.

When further improvement in open-steel floors is called for by changes in business practice—Blaw-Knox will lead as always.

Blaw-Knox Catalog No. 1887 gives complete details on Blaw-Knox Electroforged Steel Grating. Send for it.

DIVISION OF BLAW-KNOX COMPANY
2075 Farmers Bank Building, Pittsburgh 22, Pa.

Seven Blaw-Knex plants have been awarded the Army-Navy "E", and have regularly received renewal stars for continued high achievement in the production of war material.

BLAW-KNOX GRATING (Continued form page 312)
plant ultimately will have an annual capacity of about 11,000,000 pounds of
Marvinol type polyvinyl resins.

Chicago Molded Products Corp., Chicago, Ill. A major program of expansion involving extensive additions to present buildings and plant equipment is announced. The value of developments already completed or under way is about \$500,000, and it is expected the total expenditures will reach the million dollar mark. The first step has been the acquisition of adjoining building occupied by the Patton Tractor Equipment Company.

Eastern Gas and Fuel Associates, Koppers Coal Division, has taken over the operation of the Eccles mining properties, 10 miles west of Beckley, W. Va. in Raleigh county. The property comprises nearly 9,000 acres of coal land from which about 1,000,000 tons of coal a year are now being mined.

Manning, Maxwell & Moore, Inc., New York, N. Y. J. Robert Kelley, who joined the company in 1930 as general manager of the Mill Supply division, has been appointed executive vice-president of the corporation. In 1939 he was made



Underwood & Underwood

general sales manager of the Shaw Box Crane & Hoist Division at Muskegon, Michigan, at which time Manning, Maxwell & Moore developed their distributor policy. In June of 1942 he was appointed assistant to the president.

Westinghouse Electric Corp., Pittsburgh, Pa., has announced the election of Gwilyn A. Price as president, succeeding George H. Bucher, who has resigned from that office. Under a recent amendment of the corporation's bylaws, Mr. Price as president will be the chief executive officer. At the age of fifty Mr. Price is one of the country's youngest directing heads of a major corporation. He was elected a vice-president of Westinghouse in September, 1943, and had been executive vice-president since May, 1945. He was elected a member of the board of directors in January, 1945.

K-D Lomp Co., Cincinnati, Ohio, has acquired a plant with more than 140,000 square feet of factory space at 1910-1916 Elm Street, Cincinnati. The company, manufacturers of truck, trailer and farm

(Continued on page 316)

# The most Versatile Adsorbent ...





PITTSBURGH COKE & CHEMICAL CO.
PITTSBURGH, PENNA.
NET WEIGHT SO LBS.

Isolates
Recovers
Deodorizes
Decolorizes
Fractionates
Purifies
Catalyzes

## Other "Pittsburgh" Coke and Chemical Products

Activated Carbon · Benzol—Motor, Nitration, Pure · Coke Oven Gas · Creosote · Cresol, Meta Para · Cresol, Ortho · Naphtha, Heavy Solvent · Naphthalene · Oleum (Fuming Sulphuric Acid) · Phenel · Picoline—Alpha, Beta and Gamma · Pitch—Briquetting, Roofing, Waterproofing · Pyridine—Medicinal and Industrial · Sodium Cyanide · Sodium Thiocyanate · Sulphate of Ammonia · Sulphuric Acid—60° and 66° · Tar Acid Olis · Tar Bases, Crude · Tar—Crude and Road—Toluol—Nitration and Commercial Grades · Xylol—10°, 5° and 3°.

#### also

Neville Coke · Emerald Coal · Pig Iron · Green Bag Cements · Concrete Pipe · Sterling Old Range Iron Ore · Limestone Products

Inquiries Invited

# in Gas or Liquid Phase

More adaptable adsorptive qualities and physical characteristics make *Pittsburgh* Activated Carbon the most versatile adsorbent known. New uses are being added constantly to the already imposing list of dividend paying industrial applications.

Chemically stable, susceptible to controlled variety of form and size and readily regenerated, Activated Carbon offers present and potential opportunity for solving problems of adsorption that were previously impossible.

Pittsburgh Coke & Chemical Company is one of the leading manufacturers of Activated Carbon and was the largest single supplier of this adsorbent for the Chemical Warfare Service. Now concentrating on the development of Activated Carbon for the many commercial uses in both gas and liquid phases, the experience of our technical staff is at your service.

Quantity supply is immediately available. Send us your inquiries for quotation.

**Chemical Sales Division** 

Pittsburgh Coke & Chemical Company

**Grant Building** 

Pittsburgh, Pennsylvania





# CASTINGS

- \* Gray Iron
- \* Semi-Steel
- \* High Test Semi-Steel
- \* Any Size up to one ton

Two modern foundries equipped for fast, efficient production can meet your casting requirements.

FOREST COLORES CO.

2500 West 27th St. Cleveland 13, Ohio

**PHONE PRospect 5040** 

#### (Continued from page 314)

machinery lighting equipment, is a subsidiary of Triumph Industries, Inc., which in turn is owned by Noma Electric Corp.

Buffolo Bolt Co., North Tonawanda, N. Y., announces the incorporation of Buffalo International Corp. with J. C. Walker as president. A wholly owned subsidiary, the corporation will handle all overseas selling for the parent company and manufacturing subsidiaries. Headquarters for Buffalo International Corporation will be at 50 Church Street, New York City.

Notional Starch Products Inc., New York, N. Y. A new Southern division has been opened at 1200 South Front Street, New Orleans, La., under the managership of H. F. Stegall. The new division will serve Louisiana, Texas, Oklahoma, Arkansas, Mississippi, and Western Tennessee.

Trumbull Electric Monufacturing Co., Plainville, Conn. Carroll, D. Hepfer, associated with the company since 1928, has been appointed vice-president in charge of manufacturing. Mr. Hepler will continue to serve as president of the Pacific division in addition to his new duties. W. I. Downie has been named manager of the Seattle plant; C. E. Barkis has been made manager at San Francisco, and J. W. Barry at Los Angeles.

American Chain & Cable Co., Bridgeport, Conn. Wilmot F. Wheeler has been elected president, succeeding the late William T. Morris. Mr. Wheeler has been with the company since 1916, was elected a director in 1919 and treasurer since 1936. Cyrus N. Johns has been elected executive vice-president, and Stanley Mann has been elected treasurer.

Wogner Electric Corp., St. Louis. Mo., announces changes in factory management personnel. G. B. Evans, general superintendent since 1921, has been promoted to plant manager, C. W. Hesse succeeds Mr. Evans as general superintendent, W.-A. Okenfuss has been advanced to the position of assistant general superintendent.

Rohm and Hoos, Co. has purchased from the R. F. C. the Knoxville, Tennessee plant which the company operated during the war. Manufacture of sheet plexiglas will be resumed this spring. V. C. Henrich will continue in charge.

### NEW GRAY IRON CASTINGS FOUNDRY

Purchase of the Die Typing Corporation plant at Pontiac, Mich., is announced by the recently organized Dostal Per-Mold Foundry Co., for the production of permanent gray iron castings for the automotive, refrigerator and home appliance industries. Joseph L. Dostal, former vice president and general man-

ager of the foundry division of the Eaton Mfg. Co., is general manager of the new company.

### SECONDARY ALUMINUM IN SHORT SUPPLY

Drastic downward revision of estimates of future supplies of secondary aluminum available for disposal as surplus Government property was forecast at meeting of the aluminum smelters industry advisory committee of the Surplus Property Administration.

Only about one billion pounds is now in sight, whereas six months ago it was estimated that two and one-half billion pounds would be available before June, 1947, it was said.

In view of the prospective decrease in supply, the committee agreed on the necessity of some method of insuring equitable distribution of available supplies beyond present SPA regulations, which apply only to floor prices and to reports by disposal and owning agencies of large individual transactions to SPA. It recommended appointment of a task group representing smelters, producers and dealers to suggest a method of allocation.

It was also pointed out that unless the SPA were provided with adequate statistical information on inventories and purchases of scrap and secondary ingot and related data by the industry, it might have to adopt protective restrictions on disposal which would be unsatisfactory to the industry and the Administration alike.

Importation of aluminum scrap, from supplies now scheduled for disposal abroad in accordance with the general policy of the Surplus Property Act, was suggested as a means of assuring the industry of material for planned developments in production.

The Surplus Property Administration announced that to simplify problems of administration, it had rescinded Order 4, Regulation 9, and revised Special Order 26. The effect of the changes is to eliminate refernce to the Aluminum Company of America in the review of sales of aluminum metal, and to retain the requirement that proposed sales by RFC to any individual buyers of more than five million pounds of metal in any single month be reviewed by the SPA. Basic policies of SPA; are not affected by the changes, it was pointed out.

### ALLIS-CHALMERS RELEASES FILM ON INDUCTION HEATING

1 1 1

"Metal Magic" is the title of full color sound movie available from Allis-Chalmers, Milwaukee, Wis., which shows how induction heating, properly applied. offers industry a remarkable tool for surface hardening, annealing, brazing, soldering, melting and heating for forging because it produces high intensity, controlled heat without inflammable gases. Running time of "Metal Magic", which carries no advertising, is 12 minutes. It is for use with 16 mm sound projectors only.

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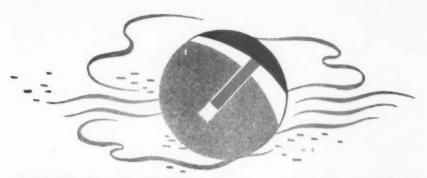
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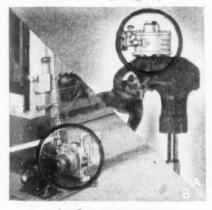
VA



### The LITTLE PARTS That ARE NOT THERE

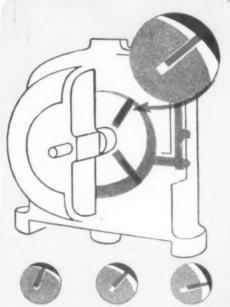
... in Gast Vacuum Pumps (to 28 Ins.), Compressors (to 30 lbs.) and Air Motors (to 1 b.p.)

Here is mechanical design that does not go around the block in order to step next-door. In Gast design the very conditions inherent in operation are themselves utilized in accomplishing the desired result-all without recourse to springs, valves, guides, rings, supports or other means-toassist-means. Can anybody imagine anything simpler than a one-piece slotted rotor with one-piece vanes that slide outward against the cylinder walls-and seat themselves perfectly, and take up their own insignificant wear-because centrifugal force won't let them do anything else:



A — On a "Lightnin'" Mixer.

B — On a Litho Equipt. & Supp. Co. Camera.



Vanes: Self-seating . . self-adjusting . . self-adjusting . . springless. Centrifugál force holds them against cylinder wall. They "work without works". . . Continuous, non-pulsating flow. . . More air per

pound of weight, more air per horsepower. . . Forcedair cooling: long life, oil economy, no hotoil odor . . Automatic shaft seal: no packing, no leaking, no adjusting.



That's Gast design. That's why Gasts deliver more air per pound and per horsepower. That's why Gasts work so dependably with so little attention. That's why Gast manufacturing can be the very finest, despite an attractive first cost. And that's why you should avail yourself of Gast experience, in applying Gasts wherever air is used or can be used to better advantage, to your greater profit and your customers' greater satisfaction.

GAST MFG. CORP. 150 Hinkley Street, Benton Harbor, Michigan



C — On Aircraft Test Equipment.D — On a Houde Sump Filter.

# VACUUM PUMPS-AIR COMPRESSORS-AIR MOTORS



ENGINEERING TEST OFFER—So You Can SEE IF YOU'RE MISSING SOMETHING! Simply write our Engineering Department and explain the operation you think air might handle, or describe the job air is already doing for you. Our Engineering Department will study your problem, select or design a Gast unit to do the specified work at less cost or at greater efficiency or both. Then, without cost or obligation, the recommended unit will be shipped to you for your performance tests.

GET THIS IDEA-CATALOG

It not only tells how Gasts are built and all about them, but suggests uses that may not have occurred to you. Write for it; no charge or obligation!



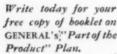
APRIL,



### NEW "GENERALIFT" PALLETS

Millions of pallets were used by the armed forces. They saved from 50% to 90% in materials handling. We are now in full production of pallets for all industry. Our engineers will design a pallet best suited to your specific needs. Write today for Pallet Book.













General Nailed Box





### Consider the Clam

-nature provides it with a sturdy, streamlined shell perfectly designed to meet the rigors and hazards of undersea life. General Engineered Shipping Containers are also especially designed for the product—and for the need. They're also actually a "Part of the Product."

They're lightweight and compact -no space is wasted. They're extra strong for positive protection.

Whatever your product may be, our engineers will be glad to help you design a better container for the more economical shipment of that product. They have had many years of experience in designing wirebounds, corrugated, and combination wood and corrugated containers-for practically all types of

Write today. Let us show you how General's "Part of the Product" Plan can speed production and cut costs.

#### **ELECTRIC STARTERS FOR ACCESSORY** GAS TURBINE POWER PLANTS

Every new business spawns others. Already the ramifications of the avia-tion gas turbine on other fields are beginning to appear. One is a special type of electric starting moter, for a gas turbine is not self starting. To start such jet-propulsion turbines as the 19B, a 10hp lightweight starter has been engineered. The job of this starter is to bring the compressor and turbine rotor from standstill to at least 2000 rpm in about 15 seconds. The starter is rated at 10 hp, 17 volts at 6000 rpm (it uses a 4 to 1 gear) but develops 18 hp at peak output. The rating is on a 30 second basis. Even so the weight is light-only 31 pounds. (A 10-hp, 1800-rpm d-c motor weighs more than 450 pounds.) A multiple-plate friction clutch is interposed between the motor and the jaw engagement to enable most rapid starting with safety.

The starter gets its power from the plane's 24-volt batteries. To obtain maximum power with least drain on the battery, the motor was designed with impedance to match that of the battery and



This gas turbine starting motor weighs but 31 pounds and develops 18-hp peak.

circuit. Since the inrush current is approximately 1800 amperes a serious commutation problem had to be overcome, and was solved by the use of a special grade of halide-treated brush. So critical is the performance of the starter to brush type that a change in brushes may change the available peak output from 8 to 18 horsepower.

This starter is but one of three types now in production and is the forerunner of several types and sizes that will be required for gas turbine starting. Already work is begun on a starter about half as large for accessory gas-turbine power plants. On the other hand propeller-drive gas-turbines will require starters several times more powerful than this first one.

### **NEW GREASE EFFECTUAL** -40° F. AND 250° F.

1 1 1

Development of a new general purpose aircraft grease which is said to actually provide satisfactory lubrication between temperature extremes of -40° F. and 250° F. is announced by the Texas Com-

(Continued on page 320)



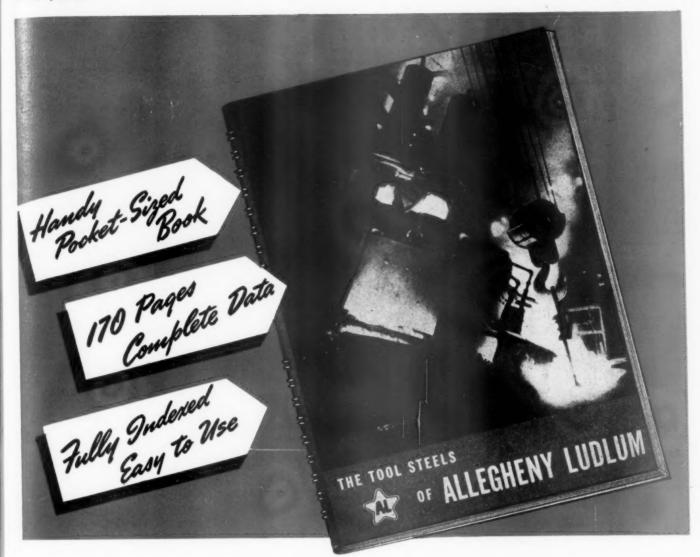
free copy of booklet on GENERAL's" Part of the

### ENGINEERED SHIPPING CONTAINERS

General BOX COMPANY GENERAL OFFICES: 48 W. Illinois St., Chicago 10, 111.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milweukee, New Orleans, Sheboygan, Winchendon.

Continental Box Company, Inc.: Houston, Dollas.



# THE ANSWERS TO ALL YOUR NEEDS IN TOOL AND DIE STEELS...

- \* HIGH SPEED STEELS
- \* HOT WORK STEELS
- \* SHOCK RESISTING STEELS
- \* COLD WORK STEELS
- \* CARBON STEELS
- \*HIGH SPEED AND TOOL STEEL FORGINGS
- \* CAST-TO-SHAPE
  TOOL STEELS
- \* COMPOSITE DIE STEELS

TO MEET ANY
REQUIREMENTS

TODAY—and for a long time to come—the premium on production cost-saving is greater than ever before. Match up each one of your machine operations with the tool or die steel that will do the job faster, better, or with less "down" time. This new booklet gives you complete information on the exceptionally large family of Allegheny Ludlum Tool Steels—invaluable data on properties, uses, selection and handling that every production man should have.

write for your copy... Address Dops. P-40

# ALLEGHENY LUDLUM

STEEL CORPORATION . General Offices, Brackenridge, Pa.

Pioneer in Specialloy Steels

APRIL

### REVOLVATOR PORTABLE ELEVATORS

### PILE ECONOMICALLY

This Hand Model REVOLVATOR is what the doctor orders for all sorts of regular and occasional piling jobs for loads up to 500 lb. where electric current is not available or the greater expense of a power driven elevator is unwarranted.

For less than \$300 you can own one of For less than \$300 you can own one of these handy machines and do away with the slow and costly "main strength" method. Has most of the valuable features of the larger REVOLVATORS except revolvable base. Load goes up easily by simple turning of crank. Machine equipped with floor lock, safety lowering speed regulator and automatic hinge lock. 26 other models for heavier and special jobs.

heavier and special jobs.



### *EVOLVATO* DESIGNERS AND MANUFACTURERS OF MATERIAL HANDLING EQUIPMENT

352 86th St., NORTH BERGEN, N. J.

Since 1904



### (Continued from page 318)

pany. Known as Regal Starfak Special. it is approved under Army-Navy Aeronautical Specification An-G-15.

It is designed for general lubrication of military and commercial aircraft in such widely varied applications as landing gears, wheelbearings, control bearings, propeller hubs, magneto and generator bearings and gears. Representative tests on this lubricant are given below:

Penetration at // F.,	
worked (ASTM)	260
Water (by dist.) %	0.1
Dropping Point, (ASTM) °F	308
Sodium Soap, %	13.7
Calcium Soap, %	2.8
Free Alkali, ASTM, %	None
Free Fatty Acid, ASTM, %	0.06
Mineral Oil, %	83.4
Tests on oil:	
Gravity, °API	31.3
Flash, °F.	400°F.
Fire, °F	460°F.
Viscosity at 100°F., S. U.	168
Viscosity Index	97
Pour, °F.	-10

#### SAFETY WEARING APPAREL COMMERCIAL STANDARD

Commercial Standard CS129-46, Materials for Safety Wearing Apparel, effective May 6, 1946, is announced by the Division of Trade Standards, National Bureau of Standards, Washington, D. C.

### REPORT ON "FOAMED COAL" AVAILABLE

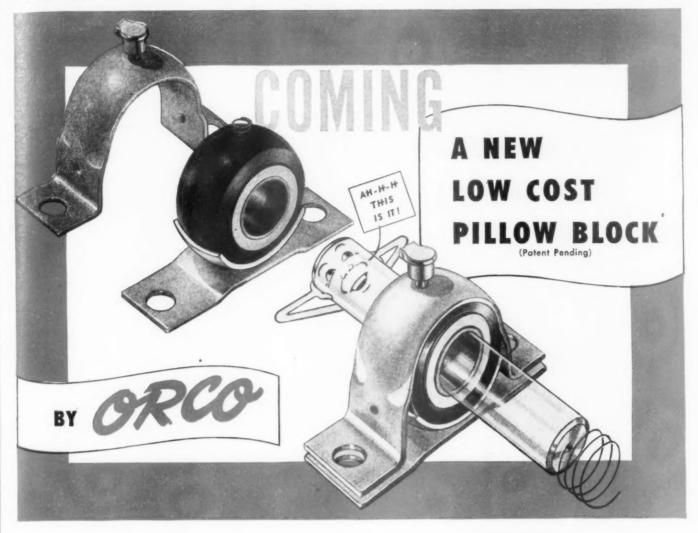
The German invention of "ioamed coal," a porous material consisting of coal particles bound together with thermosetting erosin, is reported by Allied investigators to merit further research, with a view to discovery of useful applications of the new material, the Office of the Publication Board said today.

A discussion of the invention, and of the claims made for it by the Germans, is presented in Report No. 376 (mimeographed, 3 pages), obtainable from OPB at 10 cents per copy. The report is en-titled "Interrogation of Drs. Julius Schmitt, Ludwig Schmitt, and Heinrich Schmitt, of Dr. Heinrich Schmitt Werke, K. G., Berchtesgaden." It was prepared by D. S. Fraser, J. P. Jones, Major R. A. A. Taylor, and Major F. A. Williams.

Waste smalls or fines of any coal are considered by the Schmitt brothers to be suitable for manufacturing "foamed coal." This would permit use of large above-ground reserves of material that are now regarded as colliery waste.

The principal characteristics of "foamed coal," according to the Germans, are high reactivity and permeability, resulting from the finely porous and capillary structure of the material. Because of these features, the Germans claim that the fuel would be particularly suitable for use in stationary and

(Continued on page 322)



It is the combination of features plus added advantages that make this new pillow block a noteworthy example of how ORCO engineers are contributing to produce improvements in diversified industries.

- Automatic alignment of shaft is provided under such variable conditions as fluctuating loads, bent shafts, shaft whip, end and radial thrusts, unbalanced torque, variable belt pull, or any structural changes caused by wear, variations in temperature, shifting or settling of the base on which the pillow blocks are mounted, etc.
- 2. Rust-resistant, rigid metal housing.
- Permanently grounded to eliminate arcing and radio interference under all conditions.

- 4. Long life, sintered metal bearing.
- Positive lubrication. Oversize oil reservoir. No wick to pull the oil supply from the bearing if the oil level becomes low.
- 6. Adequate dissipation of frictional heat.
- 7. Vibration-absorbing rubber ring made of special heat and oil-resistant rubber compound.
- 8. Ease of installation and removal of bearing provided by the two-piece metal housing.

SUGGESTION: Investigate this new ORCO self-aligning pillow block for future applications. Sorry that present demand makes it impossible to accept new orders which specify firm delivery dates.



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APRIL

do your schedules call for ABSCO MEEHANITE CASTINGS? ABK METAL CASTINGS? GRAY IRON CASTINGS?

> Facilities are available — at our Mahwah, N. J. foundry - to produce the highest quality castings for a limited number of additional customers on a regular production-schedule basis. Here we are equipped for green and dry sand, floor, jolt machine, squeezer and bench molding.

In this division of American Brake Shoe Company we have long specialized in Absco-Meehanite Castings (high strength and heat-resistant), ABK Metal Castings (wear and abrasion-resistant), and Gray · Iron Castings. Inquiries are welcomed.

AMERICAN **Brake Shoe**  BRAKE SHOE AND CASTINGS DIVISION 230 Park Ave., New York 17, N. Y.

(Continued from page 320)

vehicular gas producers, in gas engines and rockers, in hydrogenation processes for production of liquid fuels, and in the manufacture of chemical products. However, the Allied investigators comment that no experimental evidence was offered to show that "foamed coal" possesses the properties that would make it

suitable for the suggested uses.
Small blocks of "foamed coal," used in a Zeuch vehicular gas producer, burned at a temperature about 150 degrees Centigrade higher than the usual combustion temperature of similar fuels. As a result, the producer linings burned out, and the inventor had not found time before the end of the war to carry out further experiments to overcome this difficulty.

Report No. 376 may be puchased in Room 2065, Commerce Building, or by mail. Mail orders should be accompanied by check or money order, made payable to the Treasurer of the United States, and should be addressed to the Office of the Publication Board, Department of Commerce, Washington 25, D.C.

### GAS TURBINE OPERATION WITH GAS TEMPERATURE OF 1350 F

Successful operation at a gas temperature of 1350 F has been accomplished in a series of successively increasing temperature tests on an Allis-Chalmers ex-



perimental gas turbine plant installed in the U. S. Naval Engineering Experiment Station at Annapolis, it was disclosed recently in the first announcement concerning this important project. Designed and built by Allis-Chalmers for eventual operation with hot gas at a temperature of 1500 F, the 3500 HP unit is the first large multi-stage gas turbine for continuous power generation at high efficiency ever operated successfully at such high temperature.

Although this highly significant gas turbine has been developed as a Navy project, its basic elements have characteristics suitable for both land and marine practice, according to Allis-Chalmers engineers. In carrying out the development in cooperation with the Navy, the company is utilizing its wide experience in gas turbine practice, as already successfully applied to Houdry catalytic cracking, aircraft supercharging and jet pro-

Numerous mechanical, metallurgical and

(Continued on page 324)



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(Continued from page 322)

fluid flow problems so prominent in gas turbine development have already been overcome and much has been determined about operating characteristics of the turbine and compressor in completed stages of the comprehensive test program.

The multi-stage turbines in this installation are designed for high efficiency. The Annapolis unit embodies innovations in cooling methods, permitting the multistage turbines to operate safely at high inlet temperature by avoiding the undue weakening effect of the high temperature on the materials used for the rotating parts.

The gas turbine plant is arranged with two turbines operating in parallel, one turbine supplying the power required to drive the compressor, the second turbine furnishing the power necessary to satisfy the requirements of the driven machine or dynamometer. The compressor unit operates at a speed commensurate with the lowest possible fuel consumption. Fresh air enters the compressor at 40,000 cubic feet per minute and is discharged at a pressure of 45 pounds per square inch to the heat exchanger where it picks up heat from the turbine exhaust gases. The heated air then passes through two separately oil fired combustion chambers where it is further heated to the desired turbine inlet temperatures. The gases then expand in two multi-stage turbines, one of which supplies the power to drive the compressor, the other furnishing external shaft power.

Careful to point out the experimental nature of the Annapolis gas turbine, Allis-Chalmers nevertheless indicates in its references to this major development project that it foresees a promising future for gas turbines, particularly in railroad locomotives, aircraft propulsion units, marine and electric power generation prime movers.

### SYNTHETIC HOSE FOR SPRAYING HOT PLASTIC PAINT

1 1 1

A synthetic rubber hose reinforced with Fiberglas inner braid, through which hot plastic paint can be run at temperatures of 300 degrees, Fahrenheit, has been developed by the DeVilbiss Company engineers, Toledo, Ohio. The Fiberglas-reinforced hose is now being supplied to the United States Navy and has the possibility of wide civilian application.

The Navy uses the hose to deliver the hot paint in a spraying operation on ships' hulls. The plastic paint forms a "skin" to minimize barnacle growth.

The new paint spraying hose, reinforced with two inner braids of neoprenecoated Fiberglas yarn, manufactured by Owens-Corning Fiberglas Corporation, has a minimum bursting pressure of 2,000 pounds per square inch. Since the hot plastic paint is forced by compressed air through the hose at a pressure of 100 pounds, adequate margin of safety to the operator is allowed and deterioration of

(Continued on page 328)

CI F



The toughness and accurate fit you want in fasteners for heavy transportation jobs, for instance, are forged into Cleveland Top Quality Cap Screws by the Kaufman Double Extrusion Process. This process assures greater strength and uniformity in the various types of cap screws for any fastening requirement. Precision controlled heat treating is added in the manufacture of popular Cleveland High Carbon Heat Treated Cap Screws. It's good business to use the best cap screws you can buy—for top speed in the shop and strength in your finished product. Write the factory, or your nearest Cleveland representative.

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MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY



Louis G. Krug of the Chicago Rawhide Manufacturing Company uses one of their rawhide hammers to drive home facts about that product and about Sirvene (synthetic rubber) to Mr. W. B. Burnet, Purchasing Agent of Imperial Brass Mig. Co.

## "Inform the Purchasing Agent...

his knowledge of your product will help your sale, and what he doesn't know will surely hinder," says Mr. Krug. "This is particularly true if you are selling a new product like Sirvene.

"Our technically trained sales force knows the advantages of working with the purchasing office. The purchasing agent must know the products he buys. He can and will direct you, if necessary, to the proper persons in his engineering, production or maintenance organization. And remember, it is still up to the p.a. to place the order. If you have kept him informed he will be glad to cooperate."

Especially in the case of technical products like synthetic

rubber, the purchasing agent relies largely on the salesman and his company to furnish the necessary information. Chicago Rawhide Manufacturing Company knows from experience that education, whether on new or established products, requires advertising. PURCHASING, the P.A.'s own magazine, can be effectively used to help do this job.

Get the facts on how to get the P.A. behind your product—write PURCHASING, 205 East 42nd St., New York 17, N. Y.; 333 N. Michigan Ave., Chicago 1, Ill.; Leader Bldg., Cleveland 14, Ohio; Duncan A. Scott & Co., West Coast Representatives, Mills Bldg., San Francisco 4; Pershing Square Bldg., Los Angeles 13, California.

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Every month advertisements like the one at the left are appearing in five magazines which are "must"reading with management and sales executives.

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APRI

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# ...NO STONE UNTURNED

Everything is being done . . . Floor space added — more machines — more equipment now in use . . . 100% capacity day and night . . . every member of the Abbott organization is "in high gear" . . . Yes, we're leaving no stone unturned to keep Abbott Bearing Balls rolling to you.

ABBOTT Bearing BALLS
THE ABBOTT BALLS COMPANY PHARTFORD 10, CONN. U.S.A.

(Continued from page 324)

the rubber is minimized.

The hose, one-half inch inside diameter, will withstand maximum temperatures up to 400 degrees, according to Donald J. Peeps, chief engineer of the DeVilbiss Company.

#### ANNOUNCE PRODUCTION OF AUTOMOBILE RADIO-TELEPHONES

Philco Corporation plans to produce and sell a complete line of mobile radiotelephone equipment to provide dial telephone service in automobiles, trucks, buses and taxicabs as well as police and fire equipment, according to John Ballantyne, president.

"Incorporating the Philoo Advanced FM system and FM 1000 seven-element vacuum tube, this mobile radio-telephone equipment will include many other important research developments in the field of electronics," Mr. Ballantyne said.

"It is expected that with this equipment and the proper central station installations, the average motorist, bus, truck or taxi driver will be able to call his home or office, while driving along the highway, merely by dialing the correct number.

"This Phileo FM radio-telephone system also promises to bring telephone service quickly and economically to many remote areas, such as distant farms, ranches, mines and logging camps, without the installation of telephone poles and wires. Since FM radio is utilized, the new radio-telephone service will be reliable under all weather conditions."

#### BRIGHTER, MORE EFFICIENT MERCURY LAMP

Use of mercury-vapor lighting should receive a tremendous impetus from a new 60,000 lumen lamp developed at the West; inghouse Lamp Division, Bloomfield, N. J. The 1000-watt unit has a lumen-per-watt efficiency half again as good (60 as against 40) as the three sizes of the mercury-vapor lamps available for use without special cooling systems (100, 400, and 3000-watts). The greater efficiency results from an increase of about four times in pressure of the mercury vapor. Lamps of this rating have previously had to be water-cooled. Furthermore, this new lamp has a mogul-screw base (instead of a connection at each end of the tube). The lamp is not restricted in burning position.

The light is created in an arc stream about the shape and diameter of a cigarette and twice as long. It is enclosed in a quartz housing, in turn surrounded by a hard-glass exterior. Overall the lamp is only 14 inches long and less than four inches in diameter.

Because of its high efficiency, large light output, and small size (which means a small fixture) this lamp has many general industrial lighting uses. Especially will it be of advantage where fixtures are mounted high boys.



When steel plates are pickled, prior to galvanizing, in 10% sulphuric acid at 180° F., corrosive action is severe. The tank shown above is lined with a double course acid-brick, laid entirely with Penchlor Acid-Proof Cement, which gives corrosion protection and also withstands the physical abuse resulting from submerging and withdrawing steel plates in this solution.

#### PENCHLOR Reg. U. S. Pat. Off.

#### **Acid-Proof Cement**

... sets quickly, reducing construction delays. It is a self-hardening sodium silicate type cement and has exceptionally long life, as proved in hard service and under severe acid conditions. It is

unaffected by all acids—hot or cold—dilute or concentrated—except hydrofluoric acid.

Penchlor Acid-Proof Cement, used as a mortar, adheres strongly to brick, steel, glass, lead, rubber, and asphalt. Write today for further information.

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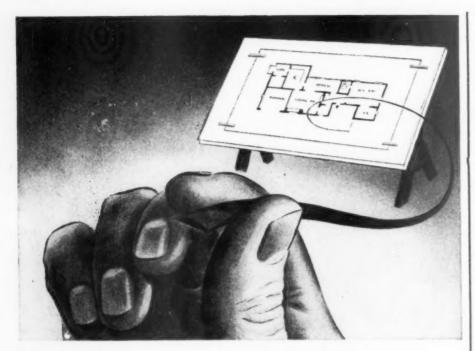
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APRI



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If you could pick up a line freshly inked on Arkwright Tracing Cloth, you'd see your preference. Your line retains its edge and doesn't go flat or "mushy". It prints like a taut wire, even re-inked over heavy or repeated

This evenness and crispness of line, coupled with the unusual transparency of Arkwright Cloths, assures contrasty, easy-to-read prints . . . and the transparency is permanent. It is obtained by special mechanical processing. Arkwright Cloths do not cloud up nor become brittle with age, because no surface oils at all are used.

Want a treat? Send for working sample. Rule lines. Notice how they flow on evenly. Erase. Hold up to light and see if you can see the markings of a ghost. You'll then have a real preference. Arkwright Finishing Co., Providence, R. I.



#### The Buyer Looks At Business

(Continued from page 105)

tion and decisive factor in all our business and economic and social policy. It may seem ironic to make this statement in view of the current industrial strife and unrest, in which the public is cast in the role of the forgotten man. Yet if we will look beyond the details of the immediate situation and raise our sights above the prejudices of class interest, we shall see that this is the only sound basis for the new balance of national and world affairs, our only salvation.

During the war years we were drawn together by the urgency of national self-preservation, and achieved a unity of interest and purpose and effort that made possible the winning of the war. That same unity, which identified self-interest with the public interest, was expressed in our international alli-Under the stress of that ances. emergency we saw and accepted the vision which Wendell Wilkie eloquently put into the phrase "One World", and which is now seeking expression in the United Nations Organization.

The practical problem which stands in the way of making that ideal a realty is a definition of who constitutes the public. No self-appointed spokesman, whether for management, labor, or government, can give us the answer, for they all have larger responsibilities beyond the interests of their own group-to the customer, the citizenry as a whole, the electorate. We are all a part of the public-every one who wants an opportunity to work, to buy those automobiles and refrigerators, to contribute his share and to enjoy the American standard of living. And the answer must be written in our daily work and relationships. Out of the present turmoil, and in the mutual settlement of disputed issues, that answer will come. We may deplore the present situation, but we should not be unduly discouraged about the time required in resolving it. After all, it took us nearly two years to square away for unified and efficient action with a world war on our hands to give us the greatest possible incentive for reaching a solution. Now we are facing a bigger problem, seeking a more permanent solution, without the force of patriotic emotion and a common emergency to give direction to our thought and action. The

(Continued on page 334)

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TAKE a good look at that picture above. It's front-page news!

All of those so-different materials are perfectly bonded by one agent.

That revolutionary, new, quicksetting plastic adhesive is *Pliobond*... developed by American industry for solving wartime production problems. Pliobond firmly joins any materials...like or unlike... metals, plastics, fabrics, glass, rubber, wood, paper, plaster, leather, concrete, etc.

With Pliobond most applications need no high pressure or heat. For exceptionally high shear strength, moderate pressure and 200-300°F. are sufficient.

Other important characteristics of this remarkable new adhesive: It's strong...permanent...withstands constant flexing...sets quickly...is immune to fungi... resists water, oils and wax.

Pliobond is always ready for instant use. Because it is a one-part

bonding agent, there are no fussy mixtures... no exact weighing. It can be brushed, sprayed, spread or roller coated.

Don't these amazing features give you ideas toward solving production problems? For technical information, please use coupon, writing us in detail on any special problems.

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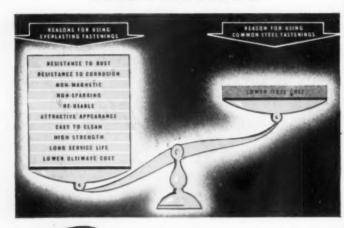
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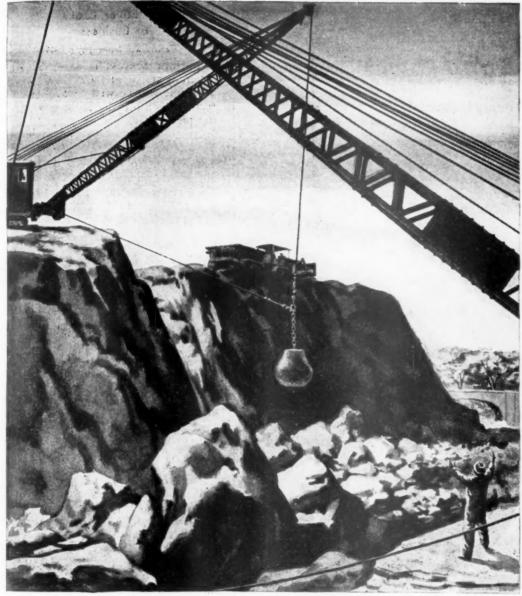
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GROUND FLUTE

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You'll see more and more jobs like these as the nation's new highway and airport building program gets under way. Skull-crackers and draglines use a lot of <u>Preformed</u> wire rope to get the material out.



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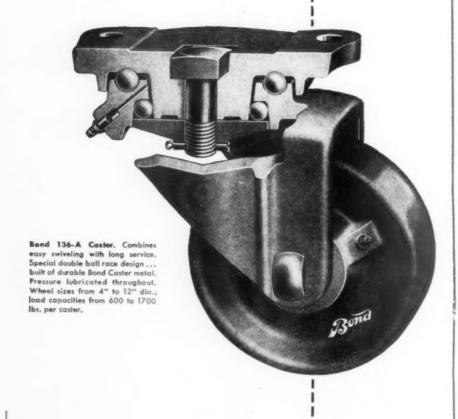
TRE ROPE HANDLES EASIER - LASTS LONGER

Г

Look over the There's a caster for every industrial use. That means you can select the right truck casters to do your job right. All for-the-job casters roll smoothly ... swivel easily... stand the strain of long, hard service. Pick the right truck caster for your needs. Send for the new eatalog-K-36-today. It's free.

BOND FOUNDRY & MACHINE CO.

MANHEIM, PA.



#### The Buyer Looks at Business

(Continued from page 330)

democratic process is slow, but it generally arrives at the right answer. The time will be well spent if it directs us to a broader and more lasting philosophy.

#### A Problem in Education

This is a problem in education for all. Neither management, nor labor, nor government can be permitted to play truant or to thumb their noses at the teacher. All three have much to learn, and the lessons may be hard. As we meet across the table in this classroom, let us remember that progress involves change, and that some of the traditional privileges represented in vested interest may not stand the test of public interest; that government has strayed far from its functional role and is currently exercising extraordinary powers beyond the intent and the charter granted in the Constitution, since we have not yet felt secure enough in peace to declare an end to the war; and that labor is much the youngest of the three in experience, in group consciousness, in the use of power, and in the ability to take the long view. Yet, perhaps on account of this very youth and enthusiasm, labor has been the most active and most effective in its educational or propaganda efforts. If we in management really believe in the principles we espouse, it is high time for us to wake up and undertake a thorough educational job.

Surely we can agree on certain Surely we have fundamentals. learned these lessons; that no appeasement or compromise can be successful which leaves our economy in a state of stress to break out at some future time; that living standards are measured in terms of goods, not in prices or income; that monopoly, whether in goods or in labor, is against the public interest; that waste, whether in material or human resources, is against the public interest; and that inflation, accomplishing no useful purpose at best, entails an aftermath of wholesale

wreckage and distress.

Purchasing Agents can no more claim to be the spokesmen for the public interest than any other group. Yet their function of seeking and demanding value peculiarly expresses this basic principle in the economic scheme that gives force and permanence to any system. They do represent demand, which

(Continued on page 336)

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# for steel users!

HROUGH our nine conveniently located warehouses, we are endeavoring to meet your every need for steel. We can also provide practical assistance in solving the many present complex problems of steel supply and fabrication. That is why steel users recognize the U·S·S Label as the symbol of dependable service.

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SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

#### The Buyer Looks At Business

(Continued from page 334)

gives effect to production and employment for useful ends. They are responsible for the expenditure of fifty cents of every manufacturing dollar and for the value received in exchange for that expenditure.

#### Significance of Purchasing

One of the standard texts on purchasing opens with a chapter on the economic significance of the buying function. To many readers, in the routine and care-free prewar world of business, the topic seemed academic and somewhat presumptuous. But the experience of wartime procurement, when purchasing kept the wheels of industry turning in spite of every conceivable difficulty, and the present problem of shaping the postwar industrial world, have given this topic a significance far beyond its original force. For the implications of purchasing policy and practice are tremendous. They represent the practical expression of an economy based on value, and a fair and workable balance between the complex forces at work in the postwar industrial and social structure.

So once more, by the force of circumstances just as powerful as those of wartime, purchasing is pushed into a major role in coping with these "outside" influences that make up the business climate in which we must work and live. Success in meeting this responsibility depends on a larger definition of what procurement entails—not merely the act of buying, but as an instrumentality for achieving and maintaining a sound economy. Not all purchasing men are aware of this, but the trend and the leadership for that trend are at hand.

Complete success toward this end can come only as management in each individual company is also aware of the significance of procurement. The lesson for management is simple: demand a sound and forceful purchasing policy to maintain value, but when you demand it remember also that you must grant to purchasing the dignity and authority to do the job.

Every purchasing man today has a deep responsibility for maintaining the principles and standards of his profession, for doing an even better job today than ever in the past. Management has the right to expect this. The greatest mistake that management can make is to expect

(Continued on page 338)



No other screw-driving method can give you the time-savings of American Phillips Screws—as much as 50% under your present assembly time. American Phillips Screws give you the self-aligned fit between screw and bit... the fumble-proof ease of driving... the slash-proof protection for work surfaces... and the value-protection for you that comes from American's quality-control and 4-phase inspection, assuring higher perfection-percentage in every order marked "American brand."

And nowhere can you find a more complete line, especially in the range of rust-resistant metals... aluminum, monel, everdur, and particularly stainless steel. American specializes in Phillips Screws of stainless steels in many different analyses, according to specifications dictated by different uses. So make use of American's unrivalled experience and know-how in metallurgical research. Write today for advice on American Phillips Screws of the type and metal that will do the best job on your fastening problem... and the best job of cutting your assembly costs to a new low.

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND

Chicago II: 59 E. Illinois Street

Detroit 2: 502 Stephenson Building



You've got Thousands to Gain—and Nothing to Lose WHEN YOU CHANGE TO:

AMERICAN PHILLIPS Screws

APRII

(Continued from page 336)

too little of its purchasing department. And expecting much, management has the responsibility of backing its purchasing policy and its purchasing men to the limit. Then we shall have a balanced economy in which we stand ready to pay fairly for what we buy and are assured of getting real value for what we pay.

Preservatives for Wood Poles

(Continued from page 101)

A discussion of wood preservatives would not be complete without a few remarks concerning methods of applying the preservatives. Even the best preservative may fail to provide adequate protection if it is carelessly or improperly applied. Good penetrations and adequate preservative retentions are therefore necessary for a successful treatment. Other things being equal, the treating process that best assures these results is the logical one to use.

There has been considerable emphasis placed upon nonpressure treatments for poles during the past few months. This has been due principally to the heavy demand and the insufficient supply of pressure-treated poles. Full-length nonpressure treatments are generally not on a par with full-length pressure treatments since absorptions and penetrations resulting from the non-pressure treatments are generally lower than for pressure treatments. When absorptions and penetrations are the same, however, the two treatments should be equal in value.

Service records on butt creosoted lodgepole pine and Douglas fir poles installed in the Rocky Mountain region have shown this treatment to provide 25 or more years of service in that territory. This does not mean that the treatment will furnish the same protection elsewhere, however. Rainfall in parts of the Rocky Mountain area is only a few inches a year. The tops of the poles are therefore not wet for long periods and do not decay rapidly. No experience is available to show the actual life that may be expected from butt-treated pine or Douglas fir poles in other regions although butt-

(Continued on page 340)





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#### Preservatives for Wood Poles

(Continued from page 338)

treated fence posts of these species, even with a substantial heartwood content, show heavy decay in the untreated tops within a period of 9 to 10 years in Wisconsin. In more humid and warmer climates top decay would be even more rapid.

Where woods of low or intermediate decay resistance are not treated in accordance with American Wood Preservers' Association Standards for full-length pressure treatment, it is suggested that their use should be confined to the zone between the 100th meridian and the summits of the Cascade and the Sierra Nevada Mountains until experience shows it is safe to use them elsewhere. Even in this territory there may be areas where experience would indicate that butt treatment is inadequate.

It is recognized that under present day conditions many comproises must be made if the users are going to get the poles they need. The situation is not yet so bad as to require a complete breaking down of the bars of good practice, however. Poles treated by recognized standard methods are still the best poles to buy. If it is necessary because of present creosote shortages to go to a different preservative. select the best that can be obtained but insist upon a method of treatment which will assure good penetration and adequate retentions. Where it is necessary to go to substandard treatments use them cautiously and only under conditions where a reasonable degree of success is definitely assured.

#### Statistical Methods of Quality Control

1 1 1

(Continued from page 123)

methods of control are not only practical but are a valuable adjunct to any control program.

#### Multiple Correlation

The place of multiple correlation in a quality control program has only recently been given adequate recognition. In the past, when trying to isolate the individual effect of numerous variables on a quality characteristic, it was felt necessary to accumulate an enormous quantity of data so that each supposedly re-

(Continued on page 342)

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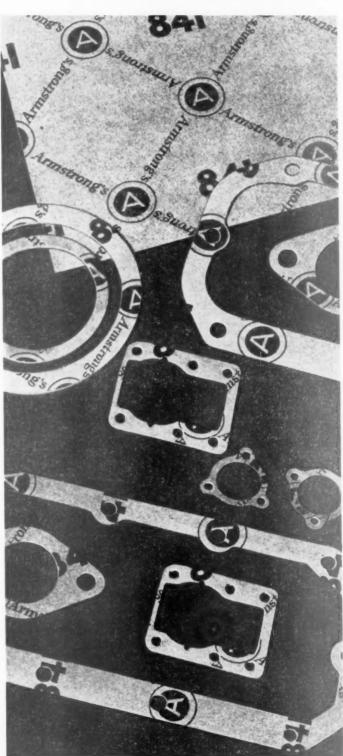
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#### Statistical Methods of Quality Control

(Continued from page 340)

lated variable could be more or less Fortunately, however, research workers in other fields have developed methods of multiple correlation whereby regression constants may be worked out simultaneously on several variables at one time. With the adoption of these methods in industry it has been found that highly reliable data can be obtained with a limited supply of

For example, it was desired to determine the factors affecting the surface quality of a certain grade of open-hearth steel billets with the view to reducing the inspection rejects and thereby increase the yield of good product. A review of the data revealed that there were 131 heats on which complete information was available and there were 21 variables which were thought to be contributing causes to the variability of surface quality. Of these 21 factors 6 were considered of sufficient significance to be included in a final multiple correlation analysis.

#### Control Charts and Correlation

Only by close coordination of control charts and correlation, when dealing with operations such as exist in steel plants, where isolation of factors causing trouble is extremely difficult, is it possible for a control program to develop its maximum efficiency. The control chart tells the state of control present in a variable but it does not tell whether the average level of control and the variability observed is the condition desired. Evaluating the desired level of control is the function of correlation. It is therefore evident that the value of each method will be greatly enhanced by a coordination of their

It is not always possible to wait until a large backlog of data has been accumulated before attempting an analysis of the various factors related to quality, for while thus marking time, product continues to be manufactured and if the quality characteristic is not controlled at a desirable level, continued production entails unnecessary loss of both material and money. Furthermore changes cannot be made promiscuously by the trial and error method because such practice is as likely to affect the quality of the product adversely as it is to improve it. In

other words, making changes without foundation is unlikely to be more advantageous than pursuing a set course. Essentially the same problem is present here as in the example of multiple correlation mentioned previously. The probably related factors are numerous, the data are limited, and in addition it is necessary that results be known as soon as possible in order that rejects may be kept at a minimum and the best possible quality of product

#### The Buyer's Aesop

(Continued from page 123)

none. Every magic carpet firm in Asia Minor has had its workers out on strike for months. They want an 18½¢ an hour raise, and the companies won't grant it because the caliph of Bagdad won't grant a higher ceiling price." He leered. "Any other time, I'll be glad to oblige you.'

"Oh, land! Oh, my goodness!" Pash was really in the soup now. "If the mediators get anywhere tonight, let me know by magic carpet. Air mail. Special delivery. Collect. In the meantime, do lend me some jet propulsion and I'll see if I can dissuade the caliph from his course.'

In one hour and thirteen minutes. a new record in jet-propelled magic carpets, Pash was back at the caliphate and burst into his boss's chamber. "They're all on strike," he cried. "If you don't raise the ceiling price, Fatima will have to

postpone her birthday!"

#### Decapitation in the Offing

"Nuts, we can't have inflation," said the caliph. "Now get back on the job and find me a carpet, or I'll follow the usual procedure. Which, in case you don't remember, is decapitation.'

So the next morning at dawn, Pash's head rolled along the irrigation ditch in the caliphian garden. Fatima didn't marry until she was 87, and then to a man much older than she. And the caliph died later, a broken old man. The magic carpet strike was never settled.

Moral: There never were any white rabbits in the economic pot. And/or: Ah, compromise were paradise enow!

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AO also makes an excellent line of leather, asbestos and welding gloves and mittens.

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#### AO 5x138 (above left)

Split cowhide—index finger steel stapled to crotch of thumb—second, third and fourth fingers steel stapled—steel stapled leather thumb patch—all seams on face of glove steel sewed—4" gauntlet. Recommended for use in steel mills on flying shears, handling rough steel scrap, etc.

#### AO 1678 Reversible Mitten (above center)

Split cowhide—reinforced with steel stapled leather patch on both sides of thumb—all seams steel sewed—reversible (may be worn on either hand).

#### AO 1644 (above right)

Split cowhide—palm and fingers steel stapled over reinforcing strips of leather—steel stapled leather patch on thumb—all seams on face of glove steel sewed—4" gauntlet. Recommended for heavy operations in foundries and steel mills; heavy casting; handling of rough scrap, etc.

#### The Case for Cartels

(Continued from page 130)

Rumania is obligated to purchase all her requirements in Russia. Should Russia be unable to supply, Rumania may purchase elsewhere, but only through the Soviet Government, which because of dominating interest in the banking syndicate will maintain complete control. That safeguards Rumania from contamination with capitalistic countries.

The Soviet-Hungarian 50-50 Economic Pact follows the pattern of the Soviet-Rumanian, as far as we have been allowed to see it. In this business. British Foreign Minister Bevin complained about what he called "constant bilateral procedure" while the U. S. State Department sent a note to the extant Hungarian Government stating it considers Hungary-American most-favorednation agreement of 1925 still effective!

All of this, of course, we are asked by the Soviet spokesman to consider a respectable agreement and representive of "true democracy" as outlined in the Atlantic Charter.

It is hardly comic to learn that American naivete is thus officially exposed, but meanwhile the Soviet goes on unhampered in its economic vassalage of Soviet dominated countries. It is interesting to observe that the Russians are a bit more practical about cartels than we are. They remember that it was the German cartellists who contributed immeasurably to their own industrialization in their first Five-Year Plan and exported to Russia nearly twice as much heavy industry and machine tools as the U. S. to the end of 1931.

A theory has been advanced by several public officials with almost ex-cathedra solemnity that whether or not other countries agree to "outlaw" cartels, the United States Government alone, by vigorously enforcing its anti-trust and anti-monopoly laws, can prevent American companies from participation in cartels forcing agreement by other nations.

Such statements reveal parochial thinking and sophomoric reasoning. They ignore the conflicts and uncertainty of existing laws, such as the Webb-Pomerene and Sherman Acts. They assume first, that cartels should be "outlawed" without proof of guilt other than that offered by reiteration of unproven charges.

They assume that countries having natural resources, which are essential to our production, and which we must import, are in their chosen chorus of cartel condemnation.

They assume that American genius and science will speedily and profitably develop substitutes for the tin, nickel, manganese, natural rubber and other commodities for which we are now dependent on imports.

They assume that other countries will forego cartel activity while we are in scientific isolation.

They assume that we can dominate world trade by mass production.

They assume that our American price structures which maintain the highest living standard the world has known, can compete with lower or even sub-standard nations, now avidly reaching for world markets.

They assume that countries exporting the raw materials essential to our production have a choice in the matter, which they have not.

The cartel as a potent instrumentality of modern industry merits unbiased appraisal. The utilization of it in some form or by any name, in almost every country in the world, brings it into sharp focus which can not be distorted. American industry will do well to have an opinion on it, and to make that opinion known and respected in and out of Government.

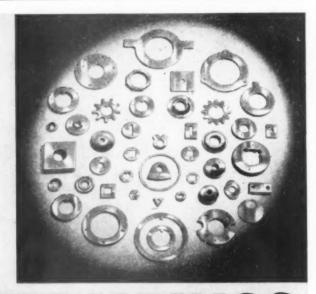
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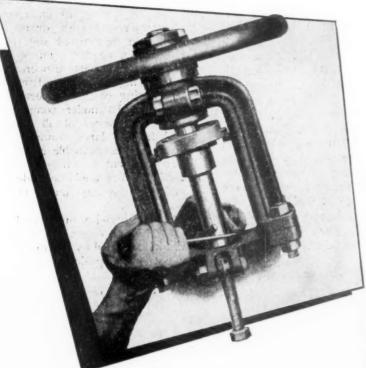
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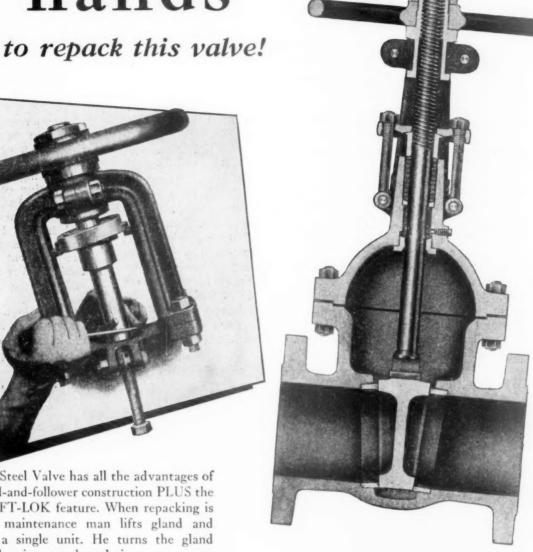


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THE OHIO INJECTOR COMPANY

VALVES

WADSWORTH .

#### **Bar Stock Inventories**

(Continued from page 87)

the number of different metals as small as possible.

6. Notification regarding rush orders that antecede the routine processing and distribution of the purchase order should be made to receiving and stores so that when the material is received there will be no delay in getting it to the department where it is needed. Quite frequently, bar stock that is urgently required for production purposes may lie uselessly in the receiving room and be held up due to lack of the necessary paper work. A phone call or memorandum to the storekeeper will frequently expedite proper receipt and distribution of such materials.

#### Storeroom Conditions

7. Know conditions in storerooms so that there will be less friction and working at cross-purposes between purchasing and stores. Ordering 20-foot bars can be very disconcerting to a storekeeper who is in charge of a storeroom with a 12-foot rack and only a few feet of clearance back of the rack. Similarly, ordering 2-foot bars when the rack holds nothing

shorter than a 3-foot bar might lead to hard feelings. Conditions in a crowded storeroom can also be eased in some cases if material on order is held back a few weeks or if large shipments are broken up into smaller lots to be delivered over a period of time.

#### Avoid Overloading

8. Schedule purchases and stagger receipts wherever possible to avoid overloading the receiving department at one time and leaving this department without work at another. This condition is characteristic of many—perhaps of most—receiving departments. Purchasing policies can to a considerable extent smooth the flow of work into receiving.

The above-outlined steps for coordinating the work of purchasing and stores and receiving will by no means solve all of the problems that may arise, nor will they by themselves make for revolutionary increases in efficiency. However, these simple procedures will aid all departments concerned in doing a better job. They can do this; hence, they are of sufficient value to bear serious consideration.

#### Horse-and-Buggy Purchasing

(Continued from page 109)

designed to provide broad powers to use negotiated procurement as a dynamic instrument of preparedness. It will permit the taking into consideration of factors such as geographical location, avoidance of over-concentration in a few companies, maintenance of a basic core of plants, facilities, skills and personnel, around which there can be expansion when urgently needed. Without such powers, it is held that plants, facilities, skills and personnel needed during an emergency may atrophy through disuse or may not be constructed and ready for use when needed. The exception likewise covers procurement requiring high, but not determinable, starting costs. If such contracts were let under competitive bidding, the prices of all bidders would include large contingencies for these undeterminable costs. If the procurement were negotiated, an analysis of costs would be made and would disclose any unreasonableness.)

14. If otherwise authorized by law. (This preserves an existing authority provided by law to the extent not to be repealed.)



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NOTE: On your request we will gladly send you free our monthly AUTOMOTIVE NEWS LETTER, containing interesting, up-to-the-minute facts about the industry.

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#### How Purchasing Engineers Function

(Continued from page 114)

small and indefinable signs which tell an experienced man that a plant is working close to the limit of its borrowing capacity and probably has no funds available for modernization or even for adequate maintenance. They can sniff impending labor trouble. And by adding up all the facts they inform their purchasing departments as to whether or not a prospective vendor is a good bet.

#### Helpful Specifications

One of the most useful contributions of these purchase engineers to industry is the clarifying of inquiry and of purchase specifications. In case after case they have found that prospective vendors were quoting on the basis of "shop blue prints" which were perfectly clear to plants accustomed to making the parts in question but were misleading to engineers who were seeing the prints for the first time. The business of clarifying and amplifying such prints has gone so far that in many a company the "request for quotation" print is much

different from the "shop print." The quotation print even contains hints on how to produce the part and how to calculate costs. As examples, it contains such statements as "obtain 60 pieces from a standard bar" and "use tungsten carbide tipped form tools."

#### Be First - But Be Right

The procedure for assigning companies to these purchase engineers for investigation, is simple. The purchasing agent who interviews the salesman of a company new to him, or of a company which claims to have expanded or refined its facilities, simply passes to the purchase engineer a memo asking that the company be investigated. The memo specifies the class of products which it is hoped the vendor will be in position to supply, but the purchase engineer also is expected to find other lines and products which the prospective vendor does or can produce. The purchase engineer turns in his report and this becomes one of the guides by which the purchasing department carries out its standard procedure of selecting vendors.

One of the major electrical goods makers has found that the work of its purchase engineers has highly valuable repercussions upon its sales department.

These purchase engineers investigate new materials, products and processes. They haunt the metals shows and other new materials exhibits, make contacts with the metallurgists and other scientists of the research departments of prospective vendors, keep confidential information very securely, try by every possible means to get at anything new while it still is in the "Now we've got it, what are we going to do with it?" stage in which the course of the development can most easily be bent to the needs of their company.

#### Keeping Modern

As a result their company has had many a new process and material in full use and production long before any other company got hold of it. When comparatively new processes such as precision investment casting, powder metallurgy, and some of the plastics have burst (Continued on page 350)

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For heat treating in production operations. Semi-automatic operation and control.

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You can acquire now at good value, long needed production equipment—such as the heat treating furnaces shown in this advertisement. Check your operations today. Find out where additional or replaced equipment would cut your costs or speed processing. Then go over your needs with your nearest War Assets Corporation Regional Office\*. From the vast quantities of surplus industrial equipment on hand you will be able to pick, in all likelihood, exactly what you need at a very low price.

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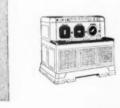
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#### How Purchase **Engineers Function**

(Continued from page 348)

upon the general consciousness of industry the whisper has gone around: "Find out what this company is doing with it; they were the first to get a big production line going on this and they know the most about it." The real profits to the company have come from keeping completely modern. But plenty of sales have been created by the company's reputation for "being first but being right.'

#### Value and Need

The strength of the purchase engineer is in the fact that he does not place orders and therefore nobody need withhold data from him in the fear that that data might influence his immediate actions. The need for the purchase engineer is in the ever increasing complexity of engineering factors in industry. One valuable source for purchase engineer personnel is among the most effective and intelligent of the men who represented purchasing departments as expediters during the war.

#### Reconverting the P. A.

(Continued from page 85)

ing the war. Sources are looking over the past performances of their customers more than ever. Many expediting forces which were disbanded at the war's end are being recruited again, but all the expediting in the world will not counteract unsound purchaser-customer relations. These start and end in the Purchasing Department. The WPB during the war made many strange bedfellows, placing orders by directives on concerns to whom the customer was a complete stranger. Some of these relationships worked well and will be perpetuated. Many of them were dropped as soon as the hand of government control was lifted. Thus building of good will by the Purchasing Agent has never been more important.

The Purchasing Agent today has a dual selling job. He has to sell his department to his own organization. With Production pressing for material, Engineering for new products, and Sales crying for the finished article, the Purchasing Agent is right in the middle. He must, therefore, organize his department on an efficient basis, answer inquiries promptly, follow-up orders steadily and aggressively, and process requisitions fast. He also has to sell his company to vendors as a good concern with whom to do business. He does this by being fair in all his dealings and making it easy to handle his account.

That is getting back to the fundamentals of good Purchasing which still hold, whether your concern makes buttons or boats, or is located

in Maine or California.

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Bulletin entitled "Infrared Parade" published by the Fostoria Pressed Steel Corp., Fostoria, Ohio, presents an informative story of the infrared process and its utilization for heat processing in industrial paint baking, preheating, drying and dehydrating operations. The bulletin describes and illustrates numerous installations of the Evenray Systems, and points out that numerous divisions of industry-metal working, plastic, leather, textiles, food, chemicals, ceramics, printing, electrical, wood and others—are utilizing infra red for baking, dehydrat-ing, preheating, etc. Wartime installations are illustrated with information on operating results.

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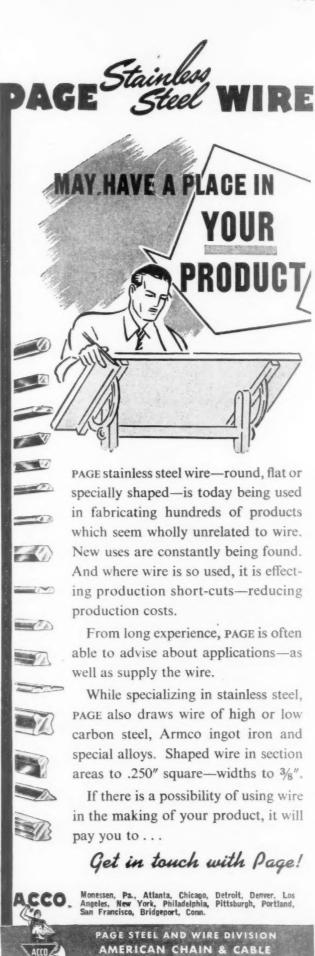
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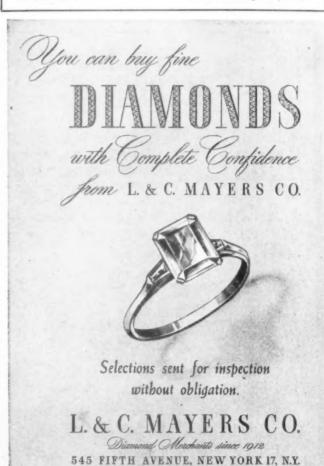
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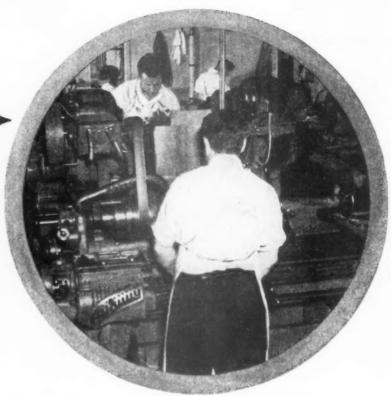
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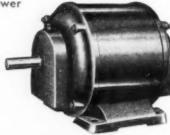


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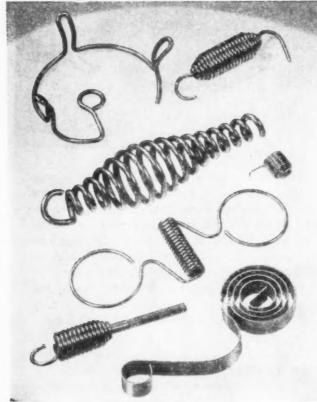
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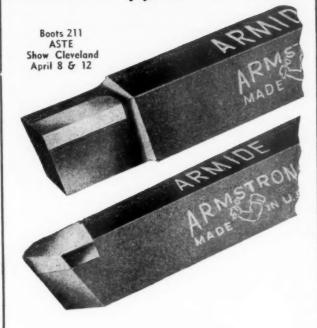
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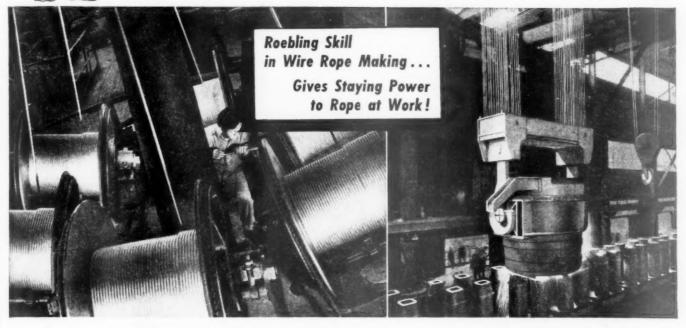


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APRII





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Railway Express Agency, Inc., Air Express Div. Randolph Labs. Rathbone, Hair & Ridgway Ce. Reading-Pratt & Cady, Div. Amer. Chain & Cable Co., Inc. Redington, F. B. Reliable Spring & Wire Forms Co., The Electric & Engineering Co. Republic Rubber Div., Lee Rubber & Tire Co. Republic Steel Corp. Revolvator Co. Reynolds Metals Co., Inc. Reynolds & Reynolds Co., The Ridge Tool Co., The Ridge Tool Co., The Rising Paper Co. Roebling's Sons Co., John A. Roper Corp., George D. Russell, Burdsall & Ward Bolt & Nut Co. 198, 199, Ryerson & Son, Inc., Joseph T.	180 226 339 60 144 352 59 309 187 272 276 361 308 227 84
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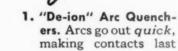
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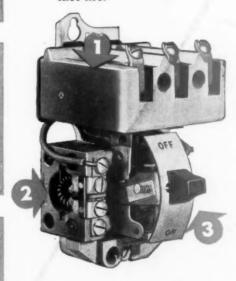
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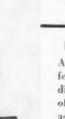
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